APRIL, 1943

# Industrial FINISHING

Published Monthly in the Interest of Modern Production Finishing

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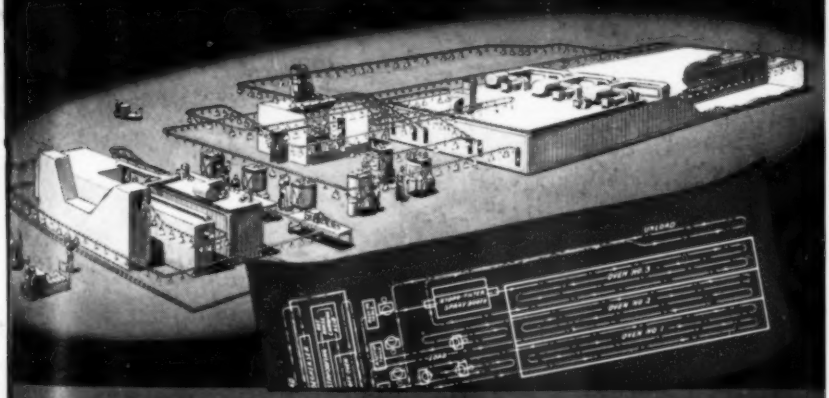


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THE NEW Paasche Airconditioners assure a clean, dry supply of air so essential in producing an enduring, blemish-free finish. They are streamlined and compact in design—strongly built to withstand high pressure, hence may be used with a wide variety of air-operated machines and tools. There are no moving parts and no filtering elements that require replacement.

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Paasche Airconditioners are supplied in sizes and types for every industrial finishing requirement—6, 12, 24, 48 and 96 cubic ft. capacity sizes.

Write for further information and literature on Paasche airconditioners and airpainting equipment.

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*Paasche* AIRPAINTING EQUIPMENT

Manual, automatic and special airpainting equipment, airfinishing booths, pressure regulators, airconditioners for compressed air lines, air dusters and stripers.

# That's Synergism

There's always been a certain amount of industrial cooperation, team work or whatever it might be called. It's existed between departments, companies, industries and has done a lot of good.

But war has shown us that it has to be vitalized, given a whole new outlook, in a word, synergized. The term synergism may be new to industry but it's an old word. Doctor, chemist, theologian have known it. Derived from two classical Greek words, it means, basically, "forces working together to produce a whole greater than the sum of its parts."

If ever "Synergism"—industrially speaking—was needed, it is in these war days and in the peace that will follow. Unheard-of new conditions, the necessity of new products to overcome shortages, the needs of great masses of people, and other factors demand that we get together individually, departmentally and as companies for synergistic thinking and action. Synergism, so applied, will produce great new ideas that will far exceed the results of both thinking separately. This "plus" value, born of minds that "click" truly makes **2 plus 2 equal 5.**

We at Zapon and Atlas are mighty synergism-minded. In all our fields of chemistry, coated fabrics, finishes, we're putting it to work with real results. Through directed collaboration of minds and companies we can solve many problems, create new products with new values. Let's talk it over.

ZAPON

ZAPON DIVISION · ATLAS POWDER COMPANY

*Eastern Sales:* Stamford, Conn. *Western Sales:* North Chicago, Ill.

**INDUSTRIAL FINISHES**

NINETEENTH YEAR OF PUBLICATION

# Industrial FINISHING

Reg. U. S. Pat. Office

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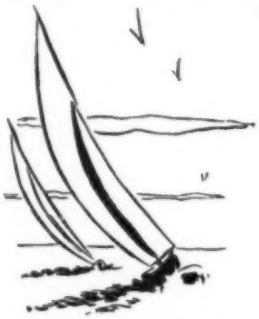

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**Duralac Chemical Corp.**

**84 Lister Ave. Newark, N. J.**

# *Letters from Readers*

## Cleaning Machines

I noticed, on page 24 of February issue, an article about a "Metal Parts Cleaner" made by the Sturdy-Bilt Equipment Co.; and on page 29 an article about another machine manufactured by American Foundry Equipment Co. On page 31 there is an article on "Cleaning Small Parts," the equipment being manufactured by the L & R Mfg. Co.

Will you please give me the correct addresses of these manufacturers so that I may get in touch with them?—N. Industrial Chemical Co. (Moulders of Plastics).

## Shellac Sticks

We would like the names of several manufacturers of shellac sticks.—T. Varnish Corp.

## Reclaiming Wasted Spray From Water-Wash Booths

I have had steady dealings with the finishing business for the past 20 years, during which time I have read practically every issue of INDUSTRIAL FINISHING. I have noticed that many "Letters from Readers" deal with the reclaiming of wasted spray from water booths.

I have discovered an economical and efficient process of reclaiming this paint and have been using the method for the past several years, in what is now a defense plant. This factory is one of six branches of a large corporation, and now my process is being used throughout the other plants. I started my reclaiming of paint from water booths in July of 1937, and since then I have reclaimed some 20,000 gallons of paint.

I believe my process is the best and cheapest I have heard of, and think

# "SO SORREE!"

## *Tojo not yet buried*

BUT WE are doing all we can to hurry the ceremony. If, in the meantime, we aren't quite up to par on service, you will understand and excuse, we are sure.

If you need any Protective Coatings on IMPLEMENTS OF WAR—WE'VE GOT 'EM! Olive Drabs, Primers, Sealers, Thinners, Airplane Dopes, Zinc Chromates and all Quality specification finishes.

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Mfrs. of "Unquestionable Quality" Industrial Finishes

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# I. C. D. FORMULA NINE

## NON-INFLAMMABLE « *wax free* REMOVER »

**for paint, varnish, lacquer, baked enamel, adhesives**

**EASY TO APPLY—NO AFTER-CLEANING**

**ORDER TRIAL GALLON AT DRUM PRICE**

**I. C. D. FORMULA 9** is the standard of safety and quality . . can be sprayed or brushed . . doesn't raise grain nor discolor . . quickly removes all kinds of finishes and coatings . . costs less to use . . saves time, labor and material.

**SPECIALTY COATINGS**—I. C. D. Labs. have specialized in the formulation and manufacture of non-inflammable coatings and substitute finishes. If you have a tough coating or finishing problem send in your specifications, finishing schedule and requirements. Immediate action and a prompt reply promised.

**INDUSTRIAL CHEMICAL DEVELOPMENT CORP.**

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# SPECIFICATION PROTECTIVE COATINGS

UNITED'S Specification Protective Coatings are doing their part to help keep war production schedules rolling.

There is a specially formulated United product to meet the rigid requirements of any Government specification protective coating. Years of constant research and product development have enabled us to meet the unusual requirements and demands of war work.

Call on United for Government Specification Coatings and let us help you solve your finishing production problems and "Keep 'Em Rolling."

**UNITED'S S. P. COATINGS ARE NOW USED ON SHELLS, AMMUNITION BOXES, AMMUNITION, ARMY TRUCKS, SIGNAL CORPS EQUIPMENT, INSTRUMENTS AND PANELS, AIRPLANE PARTS, PORTABLE MACHINE SHOPS, ETC.**

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METALIZED FINISHES
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# BURDETT
*(The Original)* **"INFRA-RED PRINCIPLE"**
## GAS BURNERS
## *Double* WAR PRODUCTION

". . . on jobs we used to leave in the oven for 30 minutes, we are now getting satisfactory baking jobs in 15 minutes. On other jobs which used to require 45 to 60 minutes for a bake, now is done in less than 30 minutes. . . . checking our gas bills for the last six months, we find them 25% less than any previous monthly bill"—states another BURDETT user.

BURDETT Burners operate in all positions—vertical, horizontal and bottom side up. Request complete information.

21 NORTH LOOMIS STREET, CHICAGO

**BURDETT MANUFACTURING CO.**
*Infra-Red Gas Burners*

that I could commercialize on it through the co-operation of some readers of this magazine. I am writing this letter to ask your advice and co-operation.—Z. Mezzetti.

## Offer to Solve Cleaning Problem

In the March issue of INDUSTRIAL FINISHING, in the section, "Letters from Readers" (page 8), there is an interesting letter expressing the need for an adequate metal cleaning fluid, from a corporation. They need this metal cleaning fluid in their sheet metal and welding departments to remove oil and grease from tubular structures and aluminum parts. This letter was signed, "E. E. Corp."

We will appreciate your giving us the name and address of this organization as we believe that we have the solution to their problem.—Detroit Rex Products Co. (Metal Parts Washers; Chemical Cleaners).

## Permanent Black Finish

The process described in your article, "Permanent Black Finish," which appeared in October 1942 issue of INDUSTRIAL FINISHING, seems to give a good finish—one which we are interested in investigating. What is the composition of the salt solution? Is it a product sold under a trade name? If so, who manufactures it, and where is it manufactured? We shall appreciate any information you may be able to give us.—O. Machinery Corp.

Several "salt solutions" for producing the rustproof black finish on iron and steel surfaces are on the market. Among the trade names are Jetal, Ebonol, Pentrate and Black Magic, each made and supplied by a different company. We are giving you the names and addresses of the manufacturers in a letter.—ED.

## What Coating to Use

Could you tell us what material can be used to plate or finish a can opener or flour sifter made of cold-rolled carbon steel, other than nickel, tin, zinc, silver, cadmium or copper? Priorities prohibit use of metals for household items. The material must be a non-priority item, which will not chip, peel or rust from food acids or from washing in a dishpan.—R. B. N.

If a black color is not too objectionable, you might investigate the possibilities of the "Jetal Process," or "Pentrate," or "Black Magic." Some information about this chemical process of blackening steel to rust-proof

*Now!*

**V.E.P.**

**MACHINE TOOL FINISH**

*Meets Government Limitations*

*Order No. L-108*

Here's a new, pore-filling War finish that's ideal for castings. The prime coat is applied with a spatter gun; this overflows the pits and makes "goose pimples." The finish coat produces a pleasing embossed appearance and no depressions remain.

ORDER

*Primers:*

39-200 Spatter-coat Combination Primer-filler, Px Type.

12-213 Spatter-coat Combination Primer-filler, Syn. Type.

*Finishes:*

38-221 Standard Mach. Tool Gray Lacquer

3-2018 Standard Mach. Tool Gray Enamel

Priority required.

★

*Whatever your paint problem may be—on War work or industrial products of any type—we can help you. Write us today!*

**V.E.P. COMPANY**

**DETROIT, MICHIGAN**

Division of Boydell Bros. Est. 1865

*Having Difficulty Getting Shellac?*

USE

**RONCOLAC CLEAR R-637**

*A Shellac Replacement— not a substitute*

Roncolac R-637 is extremely tough —more durable than shellac. It dries equally fast, is waterproof, has excellent adhesion, handles in every respect as easily as shellac. Roncolac Clear R-637 is not a hastily developed "war-baby." Because of its general all-around properties, many of which outperform Shellac, it will have a permanent place in the finishing field after the war. Order a trial lot. You'll want more!

***Write for Full Details***

RONAN

**T. J. Ronan Co., Inc.**

**749 E. 135th St., New York City**

***Paints — Varnishes — Lacquers***

it is contained in an article that appeared in October 1942 issue of INDUSTRIAL FINISHING Magazine.

Of course, there are many types of paint suitable for steel products, but eventually this paint would wear off from essential parts of the household products you mention, and this might be particularly objectionable.—J. C.

## In the Army Now

Got your letter and check. Thanks a lot. Believe you me, it does a guy good to get a letter when he's far from home and trying to become accustomed to a different way of life.

I guess I am out of finishing for the duration. The Air Corps does not offer anything along this line. I put in for aerial gunnery but was rejected because my eyes were not perfect. So I applied for: 1) aerial photography; 2) bombsight maintenance. This last was offered because I used to be a linotype machinist.

Am knocking off 12 to 15 miles a day and eating like a horse. I picked up 6-lbs. the first week. Will probably be here for three or four weeks. Then will go to some other school. Nice country down here (Miss.); a lot like California in regard to weather. Tall pine trees and ancient oaks covered with Spanish moss. The sidewalks are made of sea shells; very beautiful.

Good luck to you and I. F.; write soon.—AL MATLOCK.

## Interested in Letters

I have before me the February issue. Referring to "Transparent Discs" (page 4), the reclamation of waste Plexiglas, etc., can be followed here to produce the discs. May I have the firm name and address to contact them?

"Wood Flour" (page 4). I am doing just such a thing as this—making products from wood flour. Can make demonstrations. May I have firm name and address to contact them?

"Coating Job" (page 105). Would this inquirer be interested in a molding method? May I have name and address to contact them?—Samuel Wein, New York City.

## To Paint, Varnish & Lacquer Manufacturers

A great many industrial and technical coatings now involve the use of critical raw materials which can be obtained only through allocation by the War Production Board. In order that the various sections of the WPB may

*(Continued on page 98)*

★ **Research . . . .**

**Lacquers**

**Fillers**

**Stains**

**Enamels**

**Paints**

is ceaselessly invading the realm of the unknown, seeking new answers to old problems. Peace-time research reflects its achievements in todays protective coatings for shells, ships, tanks, guns and other necessities of war, as will the research of these dark war days reflect in new and higher standards of paints and finishes in the era to come—when we have won the PEACE. Stille-Young is proud of its part in todays research and eagerly envisioning the utilization of todays findings in its future service to you.

★ *Use Stille-Young Finishes and "Finish with Confidence"*

**THE STILLE-YOUNG CORPORATION**

**2300 North Ashland Avenue • CHICAGO, ILLINOIS**

**Same INGREDIENTS . . . bu**

**THE LILLY COMPANY**

HIGH POINT, N. C.

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## ...but different **RESULTS!**

THE HOUSEWIFE whose cake turned out best had "something" . . . or did something that the other didn't. The same is true in making finishing materials. Government specifications insure the same ingredients, but not the same results. Our "cooks" have the experience and the ability to get the best results from the ingredients they have to work with. For the best in specification finishes, get in touch with any of the Lilly plants listed below.*

*Indianapolis, Ind. *High Point, N. C. *Gardner, Mass.

**LILLY VARNISH COMPANY**
INDIANAPOLIS, IND.

# FAMOUS

**North Africa, 1943**

A German Panzer column is negotiating a difficult mountain trail in Tunisia. The nearest Allied troops are miles away. But suddenly a deafening explosion shakes the earth! An American land mine has accomplished its mission.

# PITTSBURGH

PITTSBURGH STANDS FOR

# FINISHES

## *Pittsburgh's Protective Finishes For Land Mines, Bombs, Shells And Grenades*

LAND MINES

BOMBS

SHELLS

GRENADES

MANY Pittsburgh Finishes are now seeing service on America's ships, tanks, and planes, in addition to being extensively used to protect various types of ammunition.

To meet the exact specifications of the Armed Forces, Pittsburgh Ammunition Finishes will give you the correct color, sheen, reflectance, hiding power, adhesion and final performance during shipment and in service.

To meet *your* exact requirements on the finishing lines Pittsburgh Ammunition Finishes will give you the means of easy control of film thickness, smooth spraying, on-schedule drying, so that each piece of ammunition is finished correctly, uniformly and economically.

**Free Advisory Service**—Users of industrial finishes can save time and money by consulting with us. In many plants, we have actually worked out the engineering layout for the processing system. A wire or letter will bring a Pittsburgh representative to your office.

PITTSBURGH PLATE GLASS COMPANY — Industrial Paint Division, Pittsburgh, Pa. Factories: Milwaukee, Wis.; Newark, N. J.; Houston, Tex.; Los Angeles, Calif.; Portland, Ore.—Ditzler Color Division, Detroit, Mich. — The Thresher Varnish Co., Dayton, O.

*Industrial* FINISHES

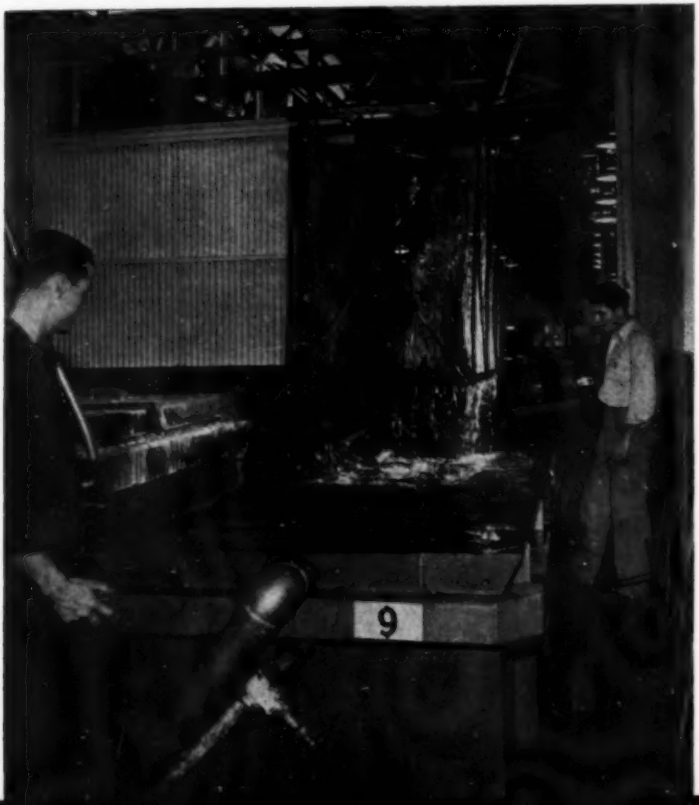
QUALITY PAINT AND GLASS

# Cleaning Steel, Brass

BY MAXWELL STILES
*Lockheed Aircraft Corporation*

REQUIREMENTS for the proper and efficient cleaning of aluminum alloy parts for aircraft manufacture were discussed in a recent article (Feb. 1943 issue, pages 38-48). The following notes will supplement our previous discussion of the methods specified for use at the Lockheed Aircraft Corp. — builders of the speedy twin-engined Lightning P-38 fighter, the mighty 4-engined transport and cargo ship known as the Constellation, the Lodestar transport, Hudson bomber, and AT-18 navigation and gunnery trainer.

Chemically cleaning and washing steel parts before they go to fabricating room.



# Bronze and Copper

Blast-cleaning parts to remove scale after annealing, preparatory to painting.

Such superficial impurities as machine oils and grease are removed from steel parts and surfaces, with the exception of corrosion-resistant steel, as follows:

The electrolytic cleaning method is considered preferable. The electrolyte is a suitable alkaline cleaner with a hydrogenion concentration (pH) of approximately 9 to 12, held at a working temperature of 180° to 200° F. The work is suspended from the cathode bar, and the circuit operates on a potential of from 6 to 12 volts. A potential producing current density of 20 amperes per square foot is applied across the bath for 30 seconds. The current is then reversed, making the work the anode, and the same potential is applied for about two seconds. This reversal of current flow causes any foreign materials, which have been plated on to the work during the cathodic cleaning, to be plated back to the walls of the tank.

While the electrolytic method is given preference, there may be times, due to heavy production, when this equipment is not available. In this instance parts may be immersed in a hot water solution (180° to 200° F.) of an approved alkaline cleaner with a pH of 9 to 12. Suitable proprietary metal cleaning compounds may be used. Or the cleaning methods specified for aluminum alloys may be adopted. These call for the use of benzol or naphtha, or solvent vapor-degreasing at a temperature of 160° to 180° F., the solution being agitated to improve cleansing action.

Steel parts cleaned by any of the methods outlined must be given a thorough hot water rinse following such cleaning operations, and

Photographs for this article supplied by courtesy of Lockheed Aircraft Corp.

After annealing, these steel tubes, with their welded fittings, are blast-cleaned.

then dried. Light machine oils may be removed from small steel parts by barrel tumbling the parts with sawdust.

### Removal of Heavy Scale From Steel Surfaces

Heavily scaled steel parts and surfaces may be cleaned by:

1) Sandblasting, wire brushing, or by similar mechanical methods.

2) Pickling in a solution of either sulphuric or muriatic acid.

From a cost standpoint, sulphuric acid is preferred, but muriatic acid is considered more effective in removing certain types of scale. The concentration of the sulphuric acid bath should be 15% by volume; and that of the muriatic acid bath, 15% to 30% by volume. Operation may be at room temperature. If the sulphuric acid solution is to be used at elevated temperatures, the acid concentration should be reduced to provide the desired speed of reaction.

Oil, grease, etc., must be removed before pickling by one of the methods previously described. Heavy loose scale should be removed by hand before beginning the pickling operation.

After pickling, unless parts are to be plated or further processed immediately, they should be dipped in a neutralizing solution, subsequently rinsed in hot water, and dried with compressed air or other suitable means. A hot-water solution of alkaline cleaner with a pH of 9 to 12, at 180° to 200° F., will serve as a neutralizing agent.

All steel parts heat treated to values in excess of 180,000-psi, which are subsequently treated by any process that causes liberation of hydrogen, must be baked for three hours at 375° F. (plus or minus 25°) after such operation, and before bending, flexing or machining. These processes include pickling and electroplating.

The pickling process for cleaning steels is preferred on the cost basis, but this treatment should not be used on parts in which closed tubes, seams, or faying surfaces are incorporated.

### Cleaning Corrosion-Resistant Steel of Grease, Oil and Scale

Superficial impurities such as machine oils and grease may be removed by alkaline-soap type of cleaners or by a vapor degreaser.

Scale is removed by pickling or by light sandblasting. Blasting with metal grit or shot is prohibited, as is the use of steel wool or polishing wheels that have been contaminated by other metals.

Parts formed by means of tools or dies made of lead, zinc, brass, or other soft metal are pickled prior to any torch welding, arc welding, annealing, or heat treatment.

Parts or assemblies that have been torch-welded or annealed re-

ceive the pickling treatment followed by passivating. Parts or assemblies joined by electric resistance welding are not required to be pickled or passivated after welding.

### Pickling Treatment of Steel

The pickling treatment for corrosion-resistant steel consists of an immersion of the parts in one of the following solutions:

1) Nitric acid, 10% to 20% by volume; hydrofluoric acid, 1.3% by volume; water, balance. Operating temperature, 130° to 150° F.

2) Sulphuric acid (commercial sp.gr. 1.84), 10% by weight; rock salt, 7% to 10% by weight; water, 80% to 83% by weight. Operating temperature, 160° to 180° F.

These solutions may be used at room temperature whenever the results of slower action will not interfere with production. The pickling solution should be agitated slowly. After the scale is loosened, the parts are removed, scrubbed clean, and thoroughly rinsed in water.

### Passivating Treatment

The passivating treatment consists of a 30-minute immersion of the parts in a 15% to 20% solution of nitric acid at 130° to 150° F. Passivation is followed immediately by a thorough water rinse.

Care must be exercised that pickling solutions do not become too old, or that they are not used when in a "spent" or contaminated condition, since such solutions cause local corrosion and pitting of the parts. Pickling and passivating solutions used for corrosion-resistant steels and iconel are not used for processing any other materials.

### Sandblasting Steel Surfaces

Sandblasting may be substituted for pickling in cleaning parts prior to torch or arc welding, except where the parts require a bright finish. Sandblasting may also be substituted for pickling after torch welding or annealing, provided the parts do not contain areas that would be inaccessible to the sand stream, in which case the parts should be pickled and passivated. If sandblasting is used as the method of cleaning, following torch welding or annealing, the passivating treatment should follow.

After final fabricating operations and before installation in the airplane, all corrosion-resistant steel and/or inconel parts that have been pickled or sandblasted should be passivated in nitric acid.

Requirements and procedures for the removal of grease and oil or scale from inconel are the same at Lockheed as those given for the cleaning of corrosion-resistant steel.

### Cleaning Magnesium Alloys

In the cleaning of magnesium alloys, organic solvents such as benzol and naphtha may be used,

Fuselage nose caps for P-38 airplanes.

or either chromodizing or phosphoric acid treatment. Preferred, however, is immersion in a hot water solution, at 180° to 200° F., of an approved alkaline cleaner with a pH of 9 to 12.

Parts cleaned in an alkaline solution receive a very thorough hot water rinse to remove all excess alkali from the metal. Parts cleaned in organic solvents must be given a final rinse in clean, unused solvent.

Sometimes there will be found an excess amount of soap or grease. When this occurs, a solution of sodium metasilicate (4 to 8-oz. per gal.) short of boiling or of 3-oz. of sodium carbonate, 2-oz. of sodium hydroxide and 1-oz. of soap in one gallon of water may be used. Another method is to dip for 30 minutes in boiling 2% caustic-sodium solution.

For the removal of oxide films, adherent dirt, and preparation of corroded surfaces, more severe treatments are necessary, such as dipping for a few seconds in 10% nitric acid or 1% to 10% sulphuric-acid solutions. Sandblasting and scratch brushing may also be used. Brushes, if used, are of stainless steel, inconel, or bristle.

After any of these treatments, the parts should be thoroughly cleaned in cool running water, preferably followed by a dip in hot water to promote quick drying.

Welding flux is removed from parts immediately after welding by thoroughly washing and scrubbing the welded area with hot water and a brush.

Magnesium die casting should not be pickled or sandblasted. They should be cleaned by alkaline cleaning solutions.

### Cleaning Brass and Bronze

Superficial impurities in brass and bronze may be removed by methods specified for the removal of grease and oil from steel.

As indicated, the electrolytic method of alkaline cleaning is preferred.

### Cleaning Lines and Fittings

Lines and fittings that carry fuel, oil, oxygen, etc., are thoroughly cleaned before installation. They must be free from all oil, grease, soldering flux, organic material, etc., and thoroughly protected to preclude the possibility of any foreign matter entering the part.

COPPER LINES—Soldering or brazing fluxes and annealing scale may be removed from copper by acid pickling. For this purpose a solution of 3% to 5% hydrofluoric acid is recommended. Solutions of nitric, sulphuric, or hydrochloric acids may be employed for this purpose, but their action is very rapid and requires much closer supervision. Thorough rinsing in water must follow any acid cleaning of copper lines or parts.

---

Those spray hose connections and other fittings—be more careful with them. The new ones to replace them may be difficult to get, and less desirable when you get them.

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## *Alfred E. Heroux Dies of Heart Ailment*

Alfred E. Heroux, sales manager of the Paint Division of Aluminum Industries, Inc., Cincinnati, Ohio, died of a heart ailment on Sunday, March 7, after a lingering illness extending over several months. His widow, Ethel (nee Marshall), and two children, Audrey Ann and Alfred, Jr., survive him.

Mr. Heroux, known as "Al" to his host of friends in the industry, joined Aluminum Industries as a member of the Detroit office in June, 1933. In September, 1935, he was transferred to Cincinnati as sales manager of the company's Paint Division. He served in this office until his death.

***CLEANING, BONDERIZING AND PAINTING . . . .***

# Fabricated Steel Enclosures

**BY U. G. EBERSALD**

Primer is sprayed on immediately after Bonderizing to preserve full effectiveness of the Bonderizing treatment.

IN ORDER to effect savings in time, labor and material, standardization has become an important element in all branches of war production. This applies not only to munitions, but to all types of auxiliary equipment, such as electrical apparatus — and to the surface conditioning and painting operations as well as to the machining of the metal.

An interesting instance of this standardization is found in the metal-clad switchgear units being manufactured by Westinghouse Electric & Mfg. Co., East Pittsburgh, Penna. These completely assembled units are made ready for installation in various combinations for new or expanding war plants. They may be installed quickly and easily, and have practical operating features that make them especially desirable.

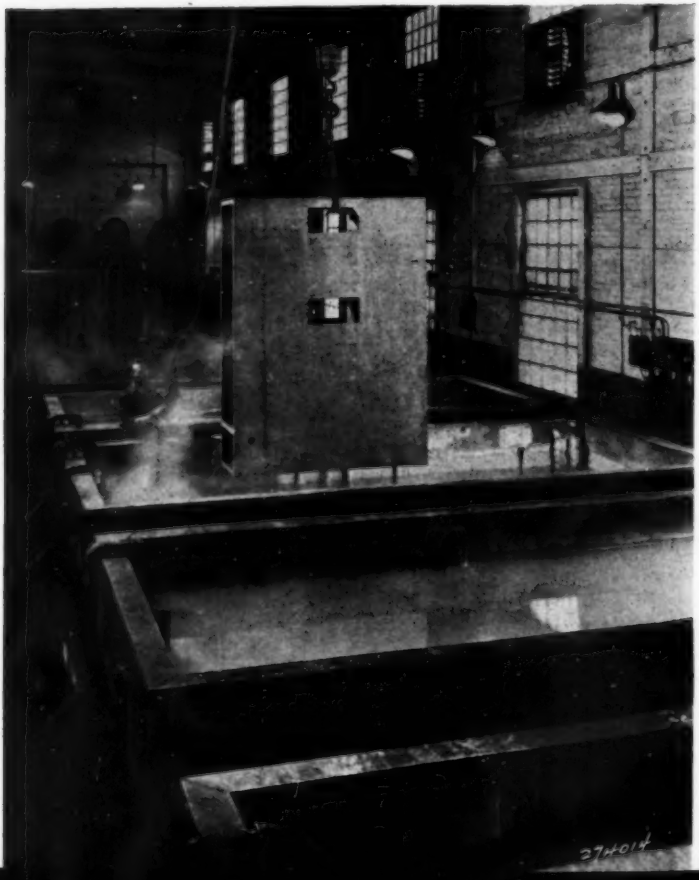
The complete units are Bonderized to provide protection against rust, and to help maintain their fine appearance for many years. These switchgear units are made of sheet steel. Prior to the Bonderizing the surface preparation includes: 1) Rust and loose scale removal by wire-brushing, scraping or rubbing with abrasive cloth; 2) removal of such substances as heavy paint or grease with a putty knife, followed by washing with a mixture of benzine and carbon tetrachloride.

The casing for the switchgear unit is almost completely fabricated before any cleaning or painting operations are undertaken. First it is immersed in an alkaline cleaning bath maintained at a temperature of 195° F. The casing is quickly removed from this bath and given a hot water rinsing. If splotches of water appear on the surface when it is withdrawn from

the rinse, this is an indication that the surface is not sufficiently clean. In this case the unit is again dipped into the alkaline cleaning bath.

The casing is now ready to be immersed in the Bonderizing solution, which is operated at a temperature of from 180° to 200° F. The length of time during which the unit is left in the solution is from two to five minutes, which is sufficient to provide a satisfactory treatment. This solution is made up in the proportion of 500-lbs. of Bonderizing Make-up compound to

Bonderizing the complete unit protects all of its surfaces against rust, and improves the appearance of the finish. Welding is completed before treatment. Units are completely immersed in a series of large tanks, containing cleaning, Bonderizing and rinsing liquids. Nothing touches the unit after this treatment, until it receives its coat of spray primer.



A thorough hand-finishing is done in this large, air-conditioned paint room.

1000 gallons of water. It has been found, from experience, that more uniform results are secured by making frequent additions to the Bonderizing solution. This is better than to make occasional large additions. In this way the strength of the solution can be kept practically constant at all times.

**Water and Chromic-Acid Rinses Followed by Drying**

After removal from the Bonderizing tanks, the units are rinsed in clean cool water for 20 to 60 seconds. This is done as quickly as possible to avoid having the solution dry on the hot metal. Rinse water is tested daily, as it is undesirable to have it contaminated to any great extent by the Bonderizing solution.

Immediately following this rinse the unit casing and parts are immersed in a chromic-acid bath which is kept at a temperature of between 180° and 200° F. The period of immersion in this solution is not less than 20 seconds nor more than 60 seconds. The solution is made up in the proportion of 5-lbs. of chromic acid to 1000 gallons of water. This is tested daily to make sure that the desired strength will be maintained at all times. The purpose of this bath is to neutralize the effect of foreign salts in the rinse water and increase the corrosion resistance of the Bonderite coating.

After treatment with chromic acid, the case is dried by its residual heat. If the drying is not complete, or if any moisture is trapped in crevices, an air blast is used to remove it.

Sludge, formed as a by-product in the Bonderizing operation, collects in the bottom of the tank. Since its presence, in large quantities, would cause dirty Bonderiz-

ing, this sludge is removed by allowing it to settle, and then pumping the clean solution into another tank. The scale, which gradually forms on the heating coils of the processing tank, is removed periodically in order that there will be no trouble in maintaining the proper solution temperature.

Inasmuch as these standardized switchgear units are quite heavy, facilities are provided for moving them from the fabrication department to the surface-conditioning and painting department with an overhead traveling crane.

When the Bonderizing and subsequent rinsing and drying operations have been completed the enclosures and parts are ready for painting. The primer coat is sprayed on immediately after the Bonderizing process, in order to preserve the full effectiveness of this rust-proofing treatment.

## Frolics in the Finishing Room—15

ONE OF OUR finishers always wore a cap to and from work. One day a fellow workman put some Bismark Brown water stain powder in the back part of his cap. At quitting time, in the evening, he put on his cap, wore it home and hung it up in the usual place. Then he went to the bathroom, proceeded to draw a basin full of water and began washing up. Pretty soon he called his wife.

"Dolly," he said, "there must be something the matter with me. I believe I am bleeding, from the looks of this water. I must be having a hemorrhage." His wife looked at him curiously and declared:

"Hank, your hair is turning red."

After he had used several basins

"My head seems to be bleeding!"

full of water he finally realized what had happened. He said nothing about it next day, as he had a pretty good idea who had played the trick on him.

A few days later Hank took some nigrosene and put it in the other fellow's hatband, so that when he put on his hat he would have a black ring around his head. He wore his hat home that day and some time after taking off his hat his wife looked at him and said:

"What's the matter with your head? You have a black ring around it."

He was almost as bad off as the other fellow in getting it removed, only the water from his head ran blue instead of red.—F. HAGAN.

## Lacquer & Chemical Corp. Appoints M. H. Schwartz

The Lacquer & Chemical Corp., 224 Fortieth St., Brooklyn, N. Y., manufacturers of lacquers, thinners, synthetic enamels and other product finishes, has appointed Morton H. Schwartz as director of advertising and sales. This appointment took effect on March 15, 1943.

For 14 years, Mr. Schwartz was the advertising and sales promotion manager of a manufacturer of paints and waterproofings in Long Island City, N. Y.

## AVOID TROUBLE BY OBSERVING CORRECT

# *Paint Shop Practices*

BY E. C. FREDERICKS

**Why it is so necessary to know and observe basic principles of correct paint shop practices in order to produce economical and satisfactory results, even in the large factories that use specification materials and all automatic power equipment.**

★

EVERY trade should have a set of iron-bound rules to govern the behavior and practices of all who participate in that trade. The machinist must know machine shop practices to get along with his boss and fellow workers. Formerly the paint shops had a set of rules, but for some unknown reason those rules go unheeded in many of our paint shops today.

After all, there are certain fundamentals upon which are based the latest practices that produce satisfactory and economical results. You may have a fine air-conditioned painting department fitted up with all of the latest equipment —waterwash booths, paint-circulating systems, mixers, conveyors, testing apparatus, drying ovens— and you may buy the latest approved painting materials and supplies, but still have a variety of troubles, plus unsatisfactory results and excessive wastage. Why? Because somewhere someone doesn't know or appreciate or observe the fundamentals of correct painting practices.

Possibly most of the workers in our war-factory painting departments never learned those fundamentals thoroughly or completely. Facing the average plant's complicated array of super-modern automatic production equipment for surface preparation, paint preparation, paint application and paint drying, you realize that this is a far cry from the old-time paint shop with its seemingly slow plodding brush painters. But let me tell you something! Things I learned in those "old plodding paint shops" I am applying today to help straighten out many troubles that are occurring in our modern war production plants, with all of their ultra-modern equipment and unlimited resources with which to buy the best materials and supplies.

If you will give me a few minutes time (you can read this at home or on the way to and from work) I would like to turn back the calendar and have you go over

with me some ABC fundamentals that I learned the hard way—and remembered.

### I Began Learning The Slow Hard Way

My introduction into working in the paint shop was anything but good. Like all others who started as a flunky, I had to do all of the dirty jobs, such as scraping, washing, rough sanding, dismounting, etc. The only time I had anything to do with paint was when a new can was opened and *I was told to stir and stir until all the contents of the can were thoroughly mixed.* This is the most important lesson for every beginner.

After leaving all of the dirty work, the second most important lesson I learned was how to *strain the paint.* To strain paint properly was not just a matter of pouring it through a strainer. It was impressed upon me just how important it is to strain every ounce of paint that is used. And the proper mesh of strainer to use for certain materials is a matter of importance too.

At this early stage of my training, cleanliness was explained. I was taught how important it is for every worker in the painting department to keep his clothes clean, his hands and face clean, and why he should wear work clothes that have no lint; why he should never allow new or used rags to lie around, etc. In those days a used rag was a fire hazard.

### Learning to Use a Brush To Properly Spread Paint

About this time I was introduced to an old brush and given a few jobs that a 10-year-old boy could do. I thought it was easy and simple, but somehow or other the master painter could find fault with the way I held my brush; the way

I was ordered to stir and stir.

I dipped the brush; the way I wiped the brush after dipping paint; the way I stroked the brush, and many more things a beginner wouldn't even dream of.

After months of this continuous teaching and learning, I was given an opportunity to apply some rough stuff. This required a special brush and all of the instructions were given. About this time I became an apprentice. I noticed more. Among the things I noticed was how carefully each brush was kept, how the length and strength of the bristle played its part in doing the job right. Now that I became inquisitive, I was given instructions for mixing flat color and oil and how to apply it, what brush to use, where and how it should be kept, etc.

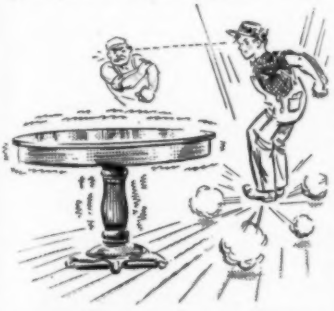
The next step was color varnish. By now I began to think I knew almost as much as the master painter, but without effort he would repeatedly show me how little I knew and how much more there was to be learned.

After each of these coats had become dry there was a sanding

operation and perhaps a repair of bad spots. To my surprise, I learned that even the sanding has much to do with the final result. Once this was mastered, I moved on to the use of rubbing varnish which comes in various bodies, types and brands. From here on, progress was slow. There was a lot of hard work to do but I learned the "feel" of the brush, how to apply the correct tension at the proper time, and how to stroke the brush over the surface in very definite ways.

At last! I got a chance to dip my brush into finishing varnish. What a thrill, making those first few strokes. But, to my dismay and embarrassment, I saw the varnish "get away from me." I had to turn the brush over to the Master Painter to clean up the mess. Finally, with more practice, I caught onto the touch, the drag, and that certain something that seems to be necessary. Now I felt that I could flow a job on as well as the boss.

Before long a very high quality job came in. I got the job of flowing a new varnish on some insignificant parts. Yes, the boss was right; it's a good thing he didn't let me touch the main part, for it would have been ruined. Well, after I had worked with my very tolerant boss for three or four years I seemed to have conquered the art. I had learned how to do all of the work, plus how to make my own hard putty, how to glaze, how to mix materials, how to make a tack cloth and use it—yes, even how to seal dust in small crevices, as well as how to properly use a pick. Most important of all, I had learned how to select, prepare, use and keep a paint brush.



I caught heck for jumping on the floor after a furniture finisher had flowed on finishing varnish, on some tables.

### Learning Required Years Then; Now It's Sometimes Only Hours

In those days, if you remained in the painting business, you became an artisan of the trade and trained those following you. Many men went before you, learning the trade in about the same way. Over a period of years there was handed down certain fundamental procedures which became an unwritten law or ritual to the trade. It took practice and experience to become expert, along with a full knowledge of the materials and tools with which the work was done.

Now let us compare this with what happens today in our highly specialized production factories. The spray gun is a mechanical tool and it makes no contact with the surface being coated—so you must employ another of your five senses, which is sight. If a man has good vision and rhythm it is possible to have him doing a fair job of spraying in the course of a few hours. In a few weeks he may become a very good spray painter.

With this procedure the painting trade becomes a lost art. All of the important knowledge about paint is not learned. The reasons for doing those fundamental things that I learned long ago are not taught to the modern spray painter. A

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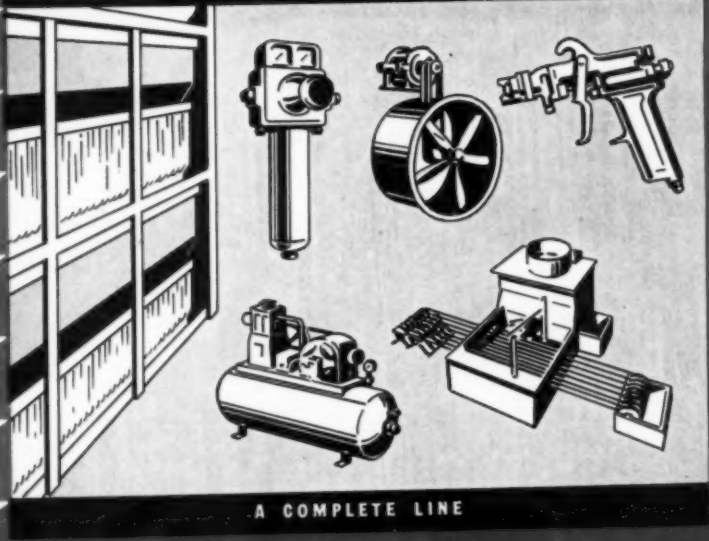

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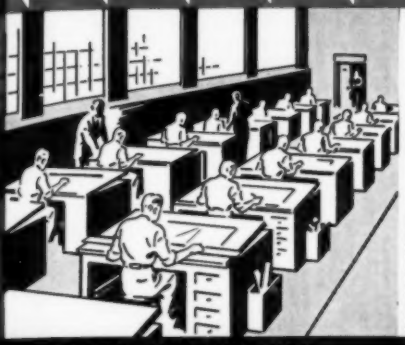
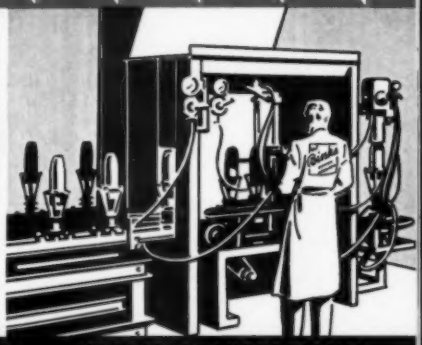


DESIGN AND DRAFTING



RESEARCH AND TESTING

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master painter of the old days never complained about bad paint until after he had definitely investigated the trouble, and then he knew what he was doing. He knew the paint as well as he knew his tools and equipment.

Under our present methods, one of two cans of paint from the same batch may give faulty results. Promptly the paint manufacturer is called in to determine the cause, only to find that it is improper preparation of the surface or some other such trouble—*all because the sound shop practices handed down over the years were not followed.*

**Some Important Practices You Should Follow Today**

What are some of the practices that should always be followed? Well here are a few:

1) STORAGE—Paint changes viscosity with temperature. No paint container should be opened for use until it has stood for a minimum of 12 hours indoors or at a temperature of 70° F.

2) MIXING—No paint should be removed from its container until it has been thoroughly mixed by agitation and is free from the smallest lumps. Each time thereafter it should be agitated before removing it from the container for use. If received in 55-gal. drums, be sure you receive it in an agitation type of drum. Then get an air-motored agitator to constantly turn the stirring paddles until the drum is empty.

3) STRAINING—All paint, regardless of quality, cost or use, should be strained. This should not be considered a waste of time. It is essential. Don't strain paint through a linty cloth. Ask your paint supplier what mesh screen he would advise.

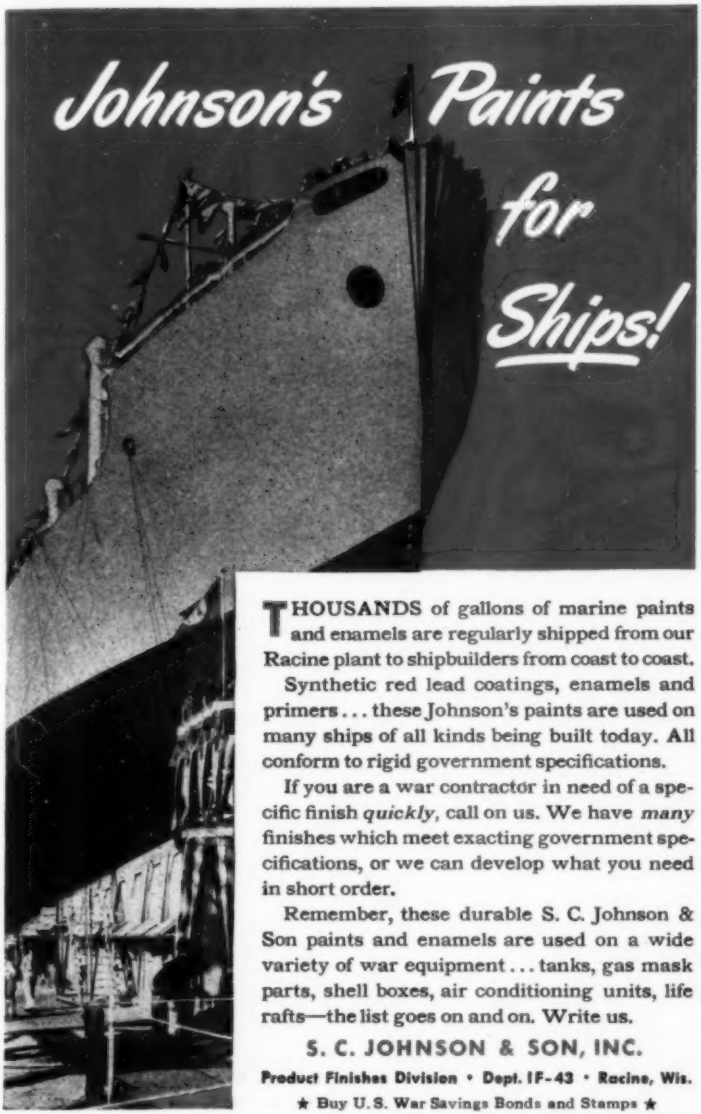
4) CLEAN SURFACE—If an object is worth painting, its surface should be cleaned so it is free from oil, moisture and dirt. More poor finishes and paint failures are caused by unclean surfaces than from any other cause. Neither degreasers nor alkali washers will remove all types of surface deposits. A full knowledge of what deposits are on the material being washed or degreased should be at hand. Even then, with all of the best brains available, trouble arises and failures creep in at times.

5) CLEANLINESS—A paint shop should be as spotless as possible. All empty containers should be moved out promptly. There should be no room for unused containers, props, rags, solvents, paints, tools, equipment, hose, boxes and a thousand other things that can accumulate in the paint department.

In case of fire, every unnecessary thing in the department becomes a very expensive fire hazard. Clean up the place and keep it cleaned up. A paint shop that is in order seldom has trouble.

6) EQUIPMENT—The quality of the work is reflected in the way a man keeps his tools and equipment. The dollar value of the finished part depends a lot on the finish. Insist upon keeping the tank, hose, gun and booth clean and in order. Time should be allotted for this and the operator should have pride enough to do it. Everybody likes to return to a clean home; likewise every man prefers to work in a clean shop and on a clean job.

7) APPLICATION—Paint is a chemical formula made up by a chemist. It is made up of various ingredients and is reduced with specific chemicals according to his formula. It has definite characteristics for time of drying—and maximum temperature if it is to enter an oven. All of these facts are established by the chemist. Instructions are given or are printed

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Remember, these durable S. C. Johnson & Son paints and enamels are used on a wide variety of war equipment... tanks, gas mask parts, shell boxes, air conditioning units, life rafts—the list goes on and on. Write us.

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on the container. Why not follow to the letter the instructions for best results with paint, as you would have your customers follow your instructions for the use of your product? You know your product is right if your instructions in reference to it are followed.

Too many paint failures are caused by experiments that seem to be satisfactory at the time. If you have enough faith in a company to buy its products, then have enough faith to follow the company's instructions on how to use those products satisfactorily.

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## Smoothing Surfaces by Power Sanding

THE smoothing and cleaning of any surface that is to receive a smooth protective coating, such as paint, enamel, varnish or lacquer, is of real importance. No paint or finish (other than wrinkle or textured finish) can completely hide a rough or uneven surface.

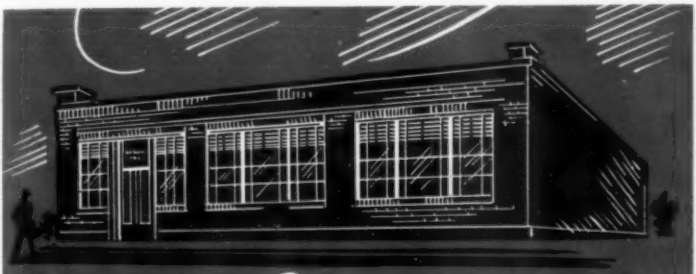
Methods of cleaning and smoothing the surfaces of products to be painted are many. An excellent production method that is being used in numerous factories today consists of sanding with portable power-driven sanders. In other words, power is applied to the sandpaper-covered pad that was formerly pushed back and forth by hand. The small pad is given a rapid back and forward motion (or reciprocating motion) with a small motor which is driven by electricity or compressed air. The motor, with sanding pad attached, is small enough and light enough to be easily picked up and applied to the work by any workman, or even by women operators. This method of sanding is many times easier and quicker than hand sanding. Naturally it is less expensive too, and it produces more uniform sanding.

The uses of abrasive paper for this type of cleaning and smoothing, on both wood and metal surfaces, are quite extensive. A wide variety of abrasive paper is available so that a satisfactory selection can be made to exactly suit every kind of smoothing job. This variety includes abrasives of different kinds and in several grades of hardness, with a complete assortment of grit sizes for each grade. The success of any sanding job depends largely upon the proper selection of the right kind, grade and size of abrasive grits used—that is, the kind with which the paper is coated.

The backing or base (paper or cloth, plus adhesive) that holds the abrasive grits in place deserves consideration, as there are different weights made to fit different kinds of sanding jobs. Where the sanding work is done by hand the heavier backing is usually more satisfactory because of the problem of holding the sheet firmly to the work. If the sanding work is done by machine a lighter backing can be used successfully because it can be securely clamped to the sanding block.

When the surface being sanded is soft and easily cut—and produces dust particles that would tend to quickly clog the abrasive—an open-coat abrasive is generally recommended. The cutting grits in open-coat abrasive are spaced to avoid becoming quickly clogged with the dust removed from the surface being sanded. In cases where the surface is hard and doesn't give off much dust that might fill in between grits of abrasive, a closed-coat abrasive is usually more satisfactory.

All of the abrasive companies can supply you with charts and recom-



WHAT IS *Your* PRODUCT FINISHING PROBLEM?

Changes are taking place so rapidly in product finishing, due to wartime restrictions, that it is next to impossible for a manufacturer to keep up with all of them. He needs a concentrated source of information and knowledge. For this reason, we offer you the broad experience and service of specialists, as well as the modern facilities of a completely equipped laboratory.

Billy Wrinkle says: "I would like to tackle your product finishing problem. I believe I can show you how to master the situation quickly and profitably."

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mendations for the various kinds of grit (or cutting teeth) to give you the fastest cutting action possible and to stand up under production service. Silicon carbide is the hardest grit available; next comes aluminum oxide, with garnet in third place. Flint and emery are the softest grits made.

Of course, in the final analysis, results with a portable power-sanding machine depend considerably upon the operator. A careful thoughtful intelligent operator will become skillful and efficient in this work. He will be able to accomplish the most work with the least effort—and with no spoilage of surfaces and no harm to the machine. New workers should be instructed and supervised at first by an experienced operator. After all, several factors enter into the requirements of satisfactory economical sanding, and unless these are all carefully observed the results produced by portable sanding may be disappointing.—X.

## Luminous Coatings For Lights

LUMINESCENT materials are becoming important lighting tools in places where it is either impossible or undesirable to apply ordinary sources of light. On board a war vessel, where the batteries or lamp bulbs have been destroyed or temporarily damaged, the ability of the crew to see the essential instruments and control valves by means of phosphorescent coatings, is an important factor in saving lives until rescue can be effected or repairs made.

In dock areas, where wartime precautions make even a dim light undesirable, luminescent materials make possible the marking of danger spots such as the edge of piers and obstructions which would constitute an accident hazard in the event of a blackout. Fire extinguishers, first-aid kits and other objects that must be readily distinguishable in case of a blackout are being given markings that glow in the dark.

On the instrument boards of fighting aircraft, the dials are given a fluorescent coating that shines when irradiated by invisible ultraviolet light. This enables the night fliers to see their instruments without being blinded by the glare of an ordinary light. Already luminous signs and markers have been installed in some war production plants to denote exits, doors, factory aisles and raid shelters. Phosphorescent coatings may be used to outline door knobs, switches and stair railings.

The commercial and military possibilities of luminescent materials are still being explored. The fluorescent lamp makes use of special powders known as phosphors which fluoresce when they absorb ultraviolet radiations. Invisible radiant energy called "black light" is produced in essentially the same way, except the invisible ultraviolet rays are used to make materials luminescent which are at a distance from and outside the lamp.

The two terms fluorescence and phosphorescence are sometimes confused. They both represent the ability of certain substances to transform some form of energy into visible light. The results are indistinguishable to the eye, but between them there is one important difference. *Fluorescence lasts only while the exciting energy source or ultraviolet "black light" is present; phosphorescence continues after the light has been removed.*—WESTINGHOUSE NEWS.

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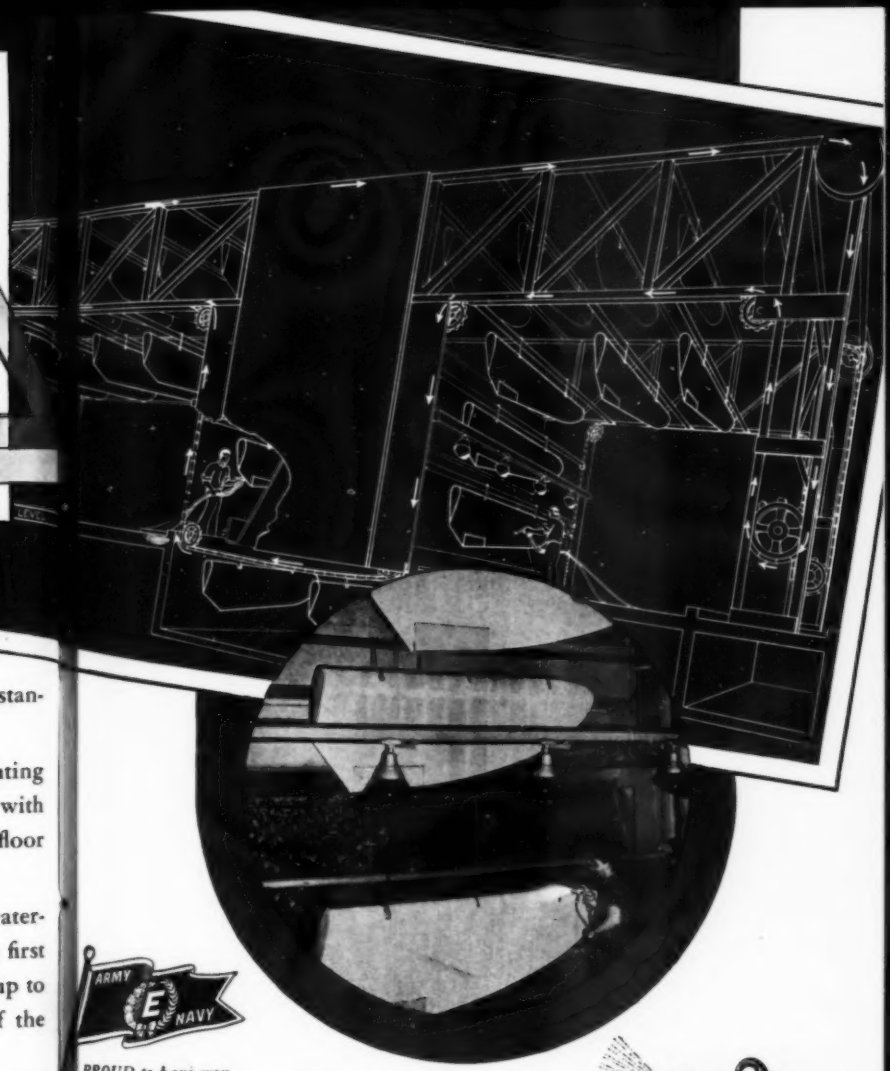
This unusual, conveyorized spray system was designed for painting wings, ailerons and stabilizers. It is outstanding for the ease with which it gets fast finishing results—for the way it conserves floor space—for its substantial savings in time and parts handling.

Wings are lowered into a unique, double faced DeVilbiss water-wash spray booth. One surface of each wing is sprayed in the first half of booth. They are then conveyed below floor level and up to the second half of the spray booth where the other side of the wing is painted.

If *your* war production involves a finishing, coating or painting operation DeVilbiss can help you do it faster and at the same time conserve manpower and improve workmanship.

**THE DEVILBISS COMPANY • TOLEDO, OHIO**

Canadian Plant: WINDSOR, ONTARIO



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# How to do Patching and Touch-up Work

BY EDWIN HOGSTROM

**Expert repairing of damaged places on finished surfaces is really essential now, since so many inexperienced workers are intrusted to important work in product finishing departments, and also because what finished articles we now own may have to last the duration.**

NEVER before has there been such a demand for experienced skillful men to patch and repair furniture and fine woodwork that has been damaged in the cabinet shop or in the process of finishing—or later in the furniture store or in the home. An experienced patcher can do wonders with his materials and equipment, so that often there is no need for a complete refinishing job, thereby saving labor and materials for more necessary work.

There are a number of different methods in the patching technique, but in this article I will discuss mainly the patching that is usually done in the finishing department. Where there is more than one patcher in the patching department, the foreman should select the most experienced and best man there and let him demonstrate to the less experienced men the different ways to make various repairs.

Where the foreman himself is a good patcher, between the two of them they can go a long way toward making the patching department really efficient, and cut the cost of refinishing to a small item. Very unusual and difficult patches to be made should be observed by the rest of the men, so that they can gain valuable knowledge for themselves as to another method of patching.

To get the cooperation of the old timers may prove a little difficult at first, as many of these fellows regard their methods as a family secret, only to be handed down from father to son, etc. When this trouble is encountered the only solution seems to be to have the rest of the men be very observing and quick to pick up what they see the experts do.

The patching of cabinets and finishes cannot be taught from a book. Only the materials used and the methods most accepted can be described. From there on, experience is the only teacher that will make a good patcher. During the depres-

sion years this trade, like many others, was not taught to new men, so that now there is a shortage of this kind of mechanics.

### Tools, Materials and Supplies For Expert Patching

The patcher's tools and materials will include one or more burn-in knives, which are used to melt the wood cement sticks (or shellac, lacquer or synthetic sticks) and press some of the melted material into the dents, holes, nicks, etc., of the damaged article. Two are usually needed, each having a blade about ¾-in. wide and 3-in. to 4-in. long, with handles to protect the workmen's hands from the heat. One should use a kind or brand of "stick" that does not swell in the repair, as some shellac sticks will do when coated with lacquer. French varnish or wax-free shellac, when diluted with alcohol and applied to a small wad of cheesecloth, with a drop or two of oil to prevent sticking, can be used to match any desired type of finish from dull to gloss—or any color, with the addition of powdered stains.

The powdered stains, some in aniline colors and some in the more common earth colors, are used to bring the color of the patch up to a satisfactory match with the surrounding finish and color. The optional steel shaver can be included and a number of touch-up brushes for painting in grain lines and touching up edges are needed. For heating the burn-in knives I prefer an electric heater that is thermostatically controlled. This will maintain the right heat for the knives. If an electric heater is not available, one can use an alcohol torch. The electric heater is better as it does not soot up the blade like an alcohol flame. There are some self-contained electrically heated knives (with heating unit attached) but these are not generally liked by most patchers because the electric cord gets in their way.

### Technique of Patching

In making a patch, always remember to use only enough cement to fill in the particular nick, hole or crack being repaired. Be careful to avoid getting too much on the surface adjoining the repair. Select a cement stick of the correct color and apply the heated knife to it. A small amount of cement will stick to the blade. Touch the melted cement to the work and press the cement into the hole with the flat part of the blade. Make a short stroke toward yourself. Use very little pressure at first to avoid scorching the old finish that surrounds the place being patched.

When the damaged place has been filled up to the top and is level with the remainder of the surface, if you have a steel shaver it can be used to level the burned-in patch down flat with the old finish. A fine steelwool, rubbed lightly across the surface for a dull finish, or some rubbing compound on a pad, will help to make the patch match the gloss of the old finish—and the patch is complete, provided the proper color of cement was used.

### Cleaning Up and Finishing Around the Patch

If the patch is too large for the shaver, or where one is not handy, use a felt block wrapped with a piece of fine grade wet-or-dry sandpaper. Dip this sandpaper-covered block into the sanding liquid (benzine and oil or gasoline, water, etc.) and sand lightly. Rub only enough to level the burned in patch down to the level of the surrounding finish. There is also available a chemical abrasive (oil abrade) that can be used on a flat

felt block. Put a few drops of the liquid abrasive on the felt and rub over the patch. The abrasive will level down the patch, but not injure the surrounding finish.

If the damaged place was more than a small hole or nick, and where sanding or rubbing has removed some of the finish, it will be necessary to rebuild the finish at this spot. To do this the French polishing method of using shellac and alcohol is recommended.

### Matching Gloss and Color

Clear French varnish, reduced 50/50 with alcohol, is first applied to a small wad of cheesecloth about the size of a quarter—or the cheesecloth can be wrapped around the forefinger, as some patchers prefer. Apply the treated pad to the work with short light strokes. A drop or two of oil will prevent it from sticking. Care should be taken to avoid using too much oil on the pad, as too much oil will impart to the patch a false finish that will sweat out after the repair has stood for some time. Such a patch, although a perfect match to the surrounding finish, will leave a ring that will be very noticeable when the excess oil dries out of the repaired spot. Also, the use of too much oil will retard the adhesion of the earth colors to the patch; and the aniline colors will not dissolve thoroughly. To get the proper action from either earth or aniline colors, the surface of the patch should always be slightly tacky.

When this patch has been built up to match the old finish in depth and body, it can be steelwooled for a dull-finish match, or left "as is" for high gloss.

Where the patch is off-color it will be necessary to use some medium of recoloring the patch to blend it with the rest of the finish. This can be done at the same time the French varnish is being used to build up the adjoining finish with the use of powdered stains.

### Colors That Patchers Use

The colors used generally include the following:

Bismarck brown R or Y. This is a red used for most mahoganies and also for the reddish casts of walnut.

Chrysoidine, which is a light reddish yellow or orange, and used as an undertone for mahogany or walnut.

Nigrosine, blue black or jet black. This is a black used for black ebony or to darken or change the effect to a darker shade of any color.

Auromine O is a bright yellow; an undertone for a warm walnut, or it may be used with black to produce a greenish cast on the work.

These colors just named are powdered aniline colors, soluble in alcohol. They are semi-transparent and allow the grain of the wood to show through, while at the same time you get an exact color match.

The earth colors generally used include the following:

Burnt umber, a red brown. Raw umber, a brown (with green cast). Red lead, a red-orange used as an undertone. (Other anilines or earth colors are usually used over this color.) Lemon yellow, yellow (with green cast) also used as an undertone. Raw sienna, yellow brown (tan). Burnt sienna, red. White lead; this white is used mostly as a light undertone for work on bleached or blond finishes.

### How to Use Colors for Matching and Blending

The customary method of using these colors (aniline or earth), in patching and blending, is to apply a small amount of the powdered

color from the end of the finger to the patch while the patch is still tacky, while the French varnish is being used to build up the finish. Touch the powder to the work between strokes of the French pad. First use the pad then the color, alternating this procedure (color, pad, color, etc.). The color will take to the moist shellac, and as more is added the darker it will appear. Experience will teach what colors to use, and how much of each. However, use your color sparingly; a small amount goes a long way.

It is seldom that one single color will make a perfect match; so we have the undertone colors to apply first, to match the background, and then the body color to complete the work.

Example: Suppose a patch has been sanded thin around a repair. The color of the wood will have to be matched with an undertone color, such as auromine or some other dye to match the original stain used. Then use earth colors over this to match the shading if necessary — or use a combination of earth and aniline colors to match the original wood stain. The lighter walnuts and mahoganies can often be matched by using only aniline colors.

On blond or wheat tones, use white-lead as an undertone, with varying proportions or raw sienna for yellow tones of wheat. Burnt umber or raw umber, properly used over white lead as an undertone, will match light brown bleached finishes.

Where the use of too much color has hidden the grain of the wood (this will happen more with the earth colors because they are not transparent like the anilines) use the small touch-up brushes to grain the open pore marks or the line grains. Mix your colors with alcohol to match the pores. Padding over these lines will blend them in with the rest of the work.

Where compressed air and spray guns are handy, much time can be saved by having a small gun with a number of extra cups filled with different shading lacquers and lacquers of different sheens to use over a patch. Much hand shading can be eliminated this way. When there is time to do it, I recommend coating over all patches and repairs with the same material as was used to finish the article originally. By doing this you make a repair that cannot be detected.

When a considerable amount of French varnish has been used, or where the entire surface has been gone over with French varnish, it will be advisable to let the article stand for some time and then dull the sheen down if necessary. This is to let the oil used as a lubricant with the shellac, sweat out of the film.

Good patchers do not use more cement than is absolutely necessary to complete a patch. Extra cement on the surface will have to be removed and the time used to do this is extra labor. Adding a small amount of a color at a time, rather than trying to do it all at once, will be more successful in the long run.

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## *Detroit Rex Opens New Southern Office*

The Detroit Rex Products Co., metal-cleaning engineers, has established new regional sales and service offices in Birmingham, Ala. Effective at once the address is 2308 4th Ave., North, Birmingham.

The new facilities will enable the company to give better service to those southern state industries in the metal-cleaning field.

Mr. Wm. A. Vensel, recently appointed Southern Region manager, has been transferred from Los Angeles, where he was manager of the Pacific Region. Mr. W. S. Fernholz, formerly Southern Region manager, has been transferred to Detroit.

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# WHAT WE LEARNED ABOUT HOW TO

# *Train Women Workers*

BY KARL M. SCHAAF

THREE million women began work in our factories in 1942. Another 2,000,000 women workers will be assimilated into American war factories in 1943, as the war production tempo increases. The Chairman of WMC tells us that "our great untapped reservoir of [labor] power in America is womanpower." The supply of manpower for labor has been almost exhausted. In order to keep production lines rolling, despite further loss of manpower to the armed services, we must therefore further tap this reservoir of womanpower.

Training the 3,000,000 women workers last year was a tremendous job. Further training of these women and the early training of new women employes will continue to be a major task throughout this year. Let us analyze some of the difficulties that arose last year, and determine how they were disposed of in order to better solve our problems this coming year.

### Good Housekeeping Is of Major Importance

The noise, dirt, grease and seeming disorder of our factories shock the new female employe's sense of order and cleanliness. It is a mental hazard to her. We must do all we can to prevent this. Good factory housekeeping improves the workers' morale. It helps to increase productive efficiency; helps to lower costs and step up quality.

How can something as easily corrected as poor factory housekeeping cause all of this, you ask? Consider alone the time and the energy lost looking for the right spray gun equipment some time; or the specified finishing material or solvents, in a cluttered disorderly department. Dirty and cramped surroundings require extra energy and effort from the worker. Working under such conditions causes the employe to tire more easily; it invites carelessness, temperamental flare-ups, spoiled work, accidents — and this slows output. Today we cannot afford this. Lack of just one piece of war equipment at the right time and place might well cause a loved one in service to lose his life.

The mental hazard caused by a poorly organized department must be eliminated. Unkempt conditions suggest waste and make quality work difficult. It behooves factory management to offer its women employes, before anything else, a clean orderly place in which to work efficiently; a neat place suggests precision. "A place for everything and everything in its place." This should be our motto.

### Wrong Ways and Right Ways to Start Women Beginners

How many of us, after placing a woman on her first job which, to her, is a strange sphere of activity, have seen her become discouraged

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and say to us, "I can't do that; I just can't"? Even though it is only a minor job of sanding, the job has her scared. Why? Largely because of the strangeness of it all, the technical terms used by the instructors, and the many do's and don'ts have confused her.

The average foreman probably hurried her to the new job, sanded a few pieces for her and explained, meanwhile, that she must sand off all the roughness, although being careful to avoid sanding through the coating of paint or film of sealer. She is further instructed to be sure the finish is dry before sanding; use a No. 4/0 sandpaper; be especially careful of corners and ridges; know that the gummed condition of sandpaper is caused either by a wet finish or by excessive friction, and to realize that when the bonus rate is four hours per 100, she must turn out 37½ pieces per hour to make 25% above her base rate of pay.

No wonder she "just can't do the job"! Though the entire explanation is clear to the foreman, because of his long association with the work, it is like a foreign jargon to the woman. Analysis of this foreman's instructions indicated three major faults: 1) The use of technical terms; 2) A too hurried explanation of the difficulties likely to arise; and 3) Telling her too much at one time, thus confusing her.

After she has thoroughly mastered the job, the technical terms, such as "No. 4/0 wet or dry sandpaper," can be explained to her. Then and only then can she and the foreman speak the same shop language. She will then be able to grasp the meaning of his words. Instead of attempting to cram the necessary instruction all into a five-minute period, the foreman (Lord knows he's a busy man today) should assure the new woman worker over and over again about the simplicity of the job. Let her watch a more experienced employe and then perform the operation under the watchful eyes of the older worker until the job is mastered.

Five main rules the foreman should always keep in mind, when giving instructions to a new woman worker are:

1) Avoid use of technical terms.

2) Explain one or two or three things clearly and repeat the main points, if it seems desirable.

3) Be courteous and kind. The lady's mind may be in a turmoil; try to put her mind at ease; build up her confidence.

4) Appoint an experienced dependable worker to assist in the training.

5) Give praise and more praise.

### Teaching the Women to Be Mechanically Minded

Women fear machinery at first. It is unfamiliar, complicated and powerful. They fear not only the machine but also their ability to operate it successfully. We must therefore introduce the machine to her as a simple piece of equipment that is made to be her slave, after she understands its operation. The intricate parts of a spray gun and its accessories, for example, need not be explained in great detail at first, nor in technical terms. Rather, the new girl should be given sufficient time to learn the hand, wrist and arm movements involved in spraying. Then she should be given actual work to practice on. After she has learned to spray correctly, the spray gun and its accessories can be explained to her in technical terms.

If the spray woman had known ahead of time of the sags, runs

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and orange peel caused by faulty handling or by faulty materials or equipment—sometimes a combination of two or three—if she had known all the things that might cause incorrect spray patterns and of the problems that arise from these, if she had understood the maze of close relationship between the size of air and material hose and different finishing materials used, she would never have tackled the job. It would have seemed impossible. The new woman worker must be assured again and again of the simplicity of the machine or operation. She must have praise and more praise to keep up her spirits.

We have found that the time, study and care devoted to better plant housekeeping, and the elimination of women's fear of the job and of the machine—these paid big dividends in 1942. They will pay even larger dividends in the year 1943. Victory in this war might well be decided by the jobs that are being done in our factories. Women will comprise at least 30% of this force by 1944, therefore too much thought, time and attention cannot be given to the training of this vast new army of workers.

## How We Fixed Our Faulty Spray Gun

DUE TO wartime changes, our company acquired a government contract which required entirely different equipment. We received this equipment from another company that had been in production on the same job. The painting equipment was second-hand and the spray guns, especially, were in rather bad shape. Our worst trouble was with the spray guns bleeding at the tip, due to the fact that the needle valves were not sealing properly in the material nozzles. I immediately ordered parts that I needed, but the need for the guns was immediate; so we experimented with one gun.

We took some rather coarse valve-grinding compound and ground the needle valve carefully into the seat in the nozzle. We finished up with a very fine grade of compound, and then tried out the gun. It worked satisfactorily. Then we fixed up the other guns with which we had the most trouble, and most of them we are still using, even though we now have the necessary new parts with which to repair them.

Such little troubles would not have worried us much in ordinary times, but in serious times, such as we are now passing through, even the smallest thing that hampers production might mean the life of someone on our distant battlefields.—DALE MUSSELMAN.

A spray equipment man advises us that he resorts to this regrinding of spray-gun needle valves at times in order to put a used spray gun in condition for immediate service. He does it quickly with the aid of a chuck on a lathe or drill at the plant where he finds the gun out of order. After grinding the surface with valve grinding compound, he wipes both metal surfaces clean and allows them to rotate in metal-to-metal contact for a very brief interval to burnish the surfaces and make them even more a perfect fit.—ED.

### *New Solvent Degreasers*

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RINKOLIN is identical and comparable in every respect to regular wrinkle in both production use and appearance. It produces a uniform fine, medium or coarse wrinkle as desired. It is applied in the usual way and bakes on similar time and temperature schedules.

**Critical Oils Banned in Making WRINKLE FINISHES**

Except in aircraft and signal corps communications, such critical oils as china wood oil (tung oil) and oiticica oil have not been allocated for wrinkle finishes since December, 1942. According to the Industrial Oils Division of the U. S. Dept. of Agriculture, it is not anticipated that these oils will be made available for such finishes in the near future.

The development of RINKOLIN wherein only linseed oil (non-critical) has been used, is fortunate indeed, and demonstrates the ability of American chemists to meet any emergency.

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# Finishing Trunks & Luggage

**BY AL. A. RITTER**
**Factory Mgr., Hartmann Trunk Co.**

THE FINISHING of a wide variety of travel goods such as hand luggage and wardrobe trunks, made of a number of different materials, presents an equal variety of finishing problems. Many of the products entering into the construction of luggage and trunks come to our plant finished, ready for cutting to pattern and subsequent assembly. These include pyroxylin-glazed fabrics, fibers and rawhide in various colors. Hardware, too, such as hinges, clamps, corner bumpers of brass-plated cold-rolled steel, come to the plant coated with lacquer. All of the solid brass hardware used on hand luggage is lacquered to prevent tarnishing.

Luggage and trunks are built up in numerous designs and sizes of strong wood framing and plywood panels, firmly locked and glued together. These wood cases are then covered with canvas, fiber, leather or rawhide. The covered pieces are stacked on factory trucks and moved to the finishing department. The type of finish used depends on the type of covering.

Fiber-covered pieces, for instance, are given a spray coat of colored lacquer or synthetic enamel, and allowed to dry overnight in a thermostatically controlled drykiln. Next day these pieces are returned to the assembly line where all hardware is put on. Then they are sent to the final spray booth, where the synthetic enamel finished pieces are given a coat of waterproof varnish, while those pieces previously given a coat of colored lacquer are now given a final spray coat of clear lacquer.

### For Fiber, Canvas and Rawhide-Covered Luggage

Canvas and rawhide-covered pieces are handled in the same way, except that all are given a final coat of clear lacquer. Lacquer is used as a final finish on the various parts because it produces a hard surface and offers excellent resistance to scuffs and abrasions. The so-called "pyroxylin-coated finish" on fabrics belongs to the same classification as our lacquer finish. However, in the case of the former, the coating is applied to sheet stock

# Buy Lock Washers by the Gallon

Where war equipment is subject to vibration—nuts, set-screws and other fastening devices must be protected against shaking loose. Berry Brothers Lionoil meets this need perfectly. Seals tightly, yet easily removable. Prevents entry of moisture and gasses — eliminates rust and corrosion. Superior to shellac because Lionoil does not become brittle. Method of application can best be determined on the job, but there are numerous practical methods—application by oil can on large bolts—dipping or spinning on small bolts and parts.

This new application for Lionoil is just another example of the helpful, alert, practical nature of Berry Brothers Industrial Paint Service. We invite you to make use of it in solving your production problems.

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by rollers, and several applications are given, thereby impregnating the pyroxylin deeply into the fibers of the canvas.

### Variety of Finish Coatings; Carefully Controlled Drying

With so varied a line, naturally there are differences in the finishing operations to meet the necessary requirements of particular pieces of luggage and trunks. In some instances metal parts are given the same color finish as the trunk body. Spray coats are applied to trunks as they slowly revolve on a turntable in the spray booth. Trimmings and bindings of rawhide are given a spray-coat of clear lacquer. This is applied very carefully and accurately, by an operator who uses a cup gun equipped with a very fine, pencil-point tip. Any final touch-up work that may be needed is also done with a cup gun.

After the finishing coats have been applied, the articles are placed in drying rooms which are supplied by air-conditioned units equipped with a water-curtain so that all air entering the drying chamber is thoroughly washed to prevent any dust particles from blowing about and alighting on the partially dried surfaces of the luggage—and the air passes through heated steam coils thermostatically controlled. Each room is also equipped with a unit heater for such drying as does not require a high temperature. These unit heaters are so arranged that one unit can be used to serve two drying rooms, if necessary.

### Accessories That Require Durable Protective Coatings

Certain accessories used on the inside of the trunks and luggage also require finishing. These include several styles of hangers, such as the combination hanger generally preferred by men, and the princess hanger which the feminine travelers find so helpful for packing long one-piece evening gowns, negligees or house coats. Fixture bars also come under this category of accessories. These bars and hangers, made of birch and walnut plywood, are dipped in a shellac sealer and are air dried while suspended from an overhead rack. They are then buffed on a waxed polishing wheel and canvas belt to give each piece a smooth, high finish for attractive appearance and to prevent any possibility of tearing or snagging silk and other fine wearing apparel in the traveler's wardrobe.

Other metal parts that go into the building of luggage and trunks include brace angles, inside clamps, etc., which, although concealed under the linings, must be primed and coated to prevent rusting or corroding which might discolor the lining. Still other parts, such as bag frames, are treated and finished for the same reason—and, in addition, for giving proper adhesion where they are covered with leather or fabric.

The type of treatment and coating depends upon where the pieces are to be used. For example, braces and clamps to go underneath linings that are glued in, are given a priming coat. Where a paste other than glue is used, the coating is a synthetic shellac. In some cases, clamps and braces come to the plant wtih a finish of Parkerizing, cadmium or Bonderizing and require no further protective coating.

On the insides of trunks a synthetic shellac is applied over the clinch of tacks, nails, rivets and burrs to prevent corrosion or rusting through the lining. On metal parts that are covered with leather, it is necessary to apply a special coating to prevent any staining or

industry's new name for top efficiency in water-wash

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*Reg. U. S. Pat. Off.

# PAINT SPRAY BOOTHS

*PHOTO: Floor-type Aqua-Restor Paint Spray Booth (FLRS-7); rear and side water-impingement walls. Equipped for fluorescent lighting.*

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# ...OR HOW A DU PONT WAR SERVICE MAN WON IN THE FINISHING ROUND

**It's one thing** to be given a set of specifications. But it's something else again to make those specifications work on *your* product in your schedule.

**For example,** take the case of the manufacturer who was finishing his war product with a black lacquer. The finish could be sprayed on without a hitch, but the 2½-minute trip through a 125° oven didn't dry the lacquer as it was supposed to. In fact, the product came out of the oven as wet as when it went in. After much experimenting this manufacturer finally boosted the oven temperature up to 180° and was running his product through the oven *twice* in order to get a satisfactory finish. The Finishing Department was a real bottleneck.

**But that's where** the Du Pont War Service Man came in. With his broad experience, it took him only a few minutes to diagnose the trouble as a "solvent lock" in the oven. Because there was inadequate circulation, the oven atmosphere was completely saturated with solvent fumes. The War Service Man suggested that the oven be altered to increase the air circulation.

**That simple suggestion** solved the problem. Now, one 2½-minute trip through the 125° oven does the job. Production is moving rapidly, and the Finishing Department is well ahead of schedule.

**Du Pont War Service Men** are out in the field to solve finishing problems just like this one. If you've got a puzzler, why not call on the War Service Man in your area? His "know-how" is yours . . . merely for the asking.

DU PONT

Better Things for Better Living
. . . *Through Chemistry*

**MAIL THIS COUPON!** E. I. DU PONT DE NEMOURS & CO. (INC.) FINISHES DIVISION, WILMINGTON, DELAWARE

☐ *Bulletins on Government Specifications*

A bulletin for each branch of the armed forces. Color chips. Application details. Drying time, etc. Helps you set up production schedules. Write here the government contract items to be finished.

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# HILO PROTECTIVE COATINGS
## GET THE WAR JOB DONE

HILO

Acid Resistant Paints
Erosion Resistant Enamels
Electrical Resistant Varnishes

Japans
Lacquers
Paints
Synthetics

Varnishes
Wrinkle Finishes
Camouflage Paints

***For Application by—***

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***PROTECTIVE COATINGS that Meet U. S. Government Specifications***

Federal Spec.
Panama Canal

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Hilo has the "Know How" to make Government Specification Protective Coatings, to apply them to surfaces of all kinds and to adjust the coatings to factory conditions.

Tell us the Hilo Coatings in which you are interested and we will send samples and complete details for handling.

## HILO VARNISH CORPORATION
**Established 1863**

**42-60 Stewart Ave.**
**BROOKLYN, N. Y.**

**2420 Washburne Ave.**
**Chicago, Ill.**

**Park Square Building**
**Boston, Mass.**

discoloration of the leather, due to possible chemical corrosion in the combination of metal, glue and leather.

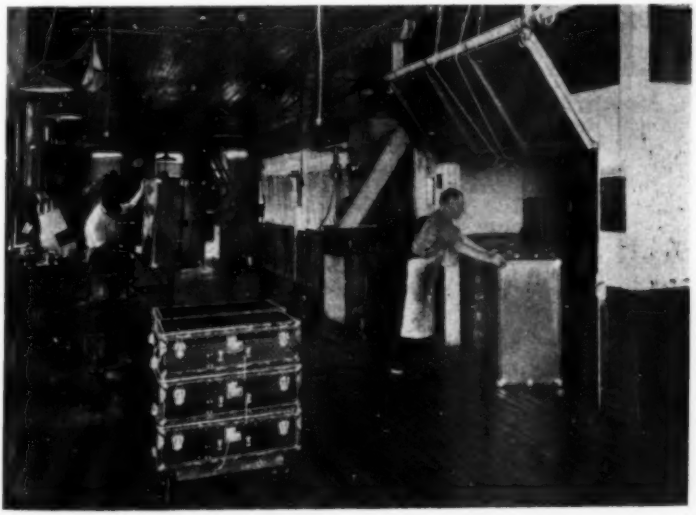
### How to Preserve the Finish on Your Luggage

A word of caution might be given here in reference to preservation of the finish on luggage and trunks. Regardless of how carefully travel goods are made and finished to withstand ordinary weather conditions and general wear, luggage users should remember that continued moisture and dampness do more harm to finishes than rain or snow. The practice of storing luggage and trunks in basements that are damp and musty, or in hot and extremely dry attics, is very harmful to these products.

Rawhide, leather and some glues, for instance, are animal matter, consequently they are subject to the growth of mold spores when exposed to dampness for a long period of time. Even in the case of canvas-covered trunks and luggage, the glue can be affected by mold spores and thus discolor the canvas. Some strains of mold produce oxalic or citric acids which readily destroy the covering materials. Because of these conditions, which in many cases cannot be overcome, it is highly important that the finish be carefully preserved.

### Wax and Special Oil Dressing for Luggage

Fiber and rawhide covered trunks and luggage should be waxed and polished from time to time, the same as an automobile body, in order to preserve the finish. This wax also acts as a lubricant against scuffing and scratching. Leather and canvas luggage should be



A workroom view in the manufacturing department of Hartmann Trunk Co.

cleaned with saddle soap and polished with a soft cloth. Commercial leather dressings are only suitable for the particular type of leather for which they are intended, but cannot be used on all leathers.

Smooth aniline-finished cowhide leather can be dressed with mineral seal oil, which penetrates the surface, making it pliable. After such an application the piece should stand for several hours and then be polished with a soft cloth. However, since mineral seal oil penetrates the surface, it is not practical for any leathers wherein pigment has been used, as it may dissolve the pigment and cause the color to rub off. There is a difference between the so-called "aniline-dyed leather" and "aniline-finished leather," because aniline-dyed leather may contain pigment.

## Tilting Containers to Pour Contents

ONE OF THE awkward, difficult and dangerous jobs that confronts workmen in some metal-cleaning and finishing departments is the handling of containers and pouring of liquids from same. In places where acid pickling baths must be provided to clean metal prior to finishing, it is especially important to have an easy safe method of tilting a carboy when drawing acid from it.

One such device that I have noticed is a low dolly-type castered truck, onto which a carboy may be easily loaded. This truck, made very light, is provided with semi-circular members at one end so that the loaded truck can be upended and tilted to just the degree needed to pour any required amount from the carboy. After pouring out a quantity of material the carboy can be returned safely and easily to upright position without spilling a drop.

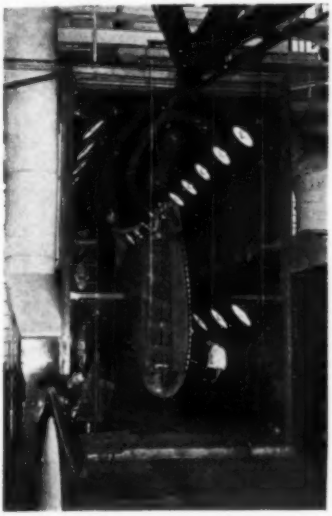
The same firm that makes this carboy tilter also provides a drum-tilting device with which one man can easily drain a heavy drum of the last drop of material it contains. It is important to have safe convenient facilities for doing this.

Even a 5-gallon can of material is awkward to handle, under some circumstances. It is often difficult to pour liquid from these containers without spilling some of it. There is available a tilting can-rack that will accommodate either square or round cans, and the arrangement is such that the can-holding portion of the rack, which does the tilting, is pivoted at two points just above the center of the can. The use of this device helps to avoid spillage. It is safe and convenient, which means more now since so many new and inexperienced employes are being entrusted to all kinds of work in factories.—N. J. R.

## *Wyandotte Chemicals Corp.*
### *(Two Former Companies)*

Consolidation of the Michigan Alkali Co. and the J. B. Ford Co., its affiliate, into one company to be known as Wyandotte Chemicals Corp. (Wyandotte, Mich.), was announced January 4 by E. M. Ford, president. The consolidation combines in one organization one of the largest producers and distributors of chemicals and the world's largest manufacturer of specialized cleaning materials.

Mr. Ford, formerly vice-president and treasurer of Michigan Alkali Co., was elected president. F. S. Ford and W. F. Torrey are vice-presidents of the new corporations; Ford Ballantyne is secretary and treasurer. Other officers are: S. T. Orr, vice-president in charge of manufacturing; I. H. Taylor, vice-president in charge of sales; G. W. Schwarz, controller; C. B. Robinson, vice-president in charge of sales, J. B. Ford Division, and Bert Cremers, vice-president in charge of sales, Michigan Alkali Division.



HERE'S HOW A

# KOCH

FINISHING SYSTEM

IS SPEEDING UP

PRODUCTION ON

# WINGS FOR OUR SKY GIANTS

Warpaint for the wings of one of the Navy's largest flying boats is applied in one, quick operation in this huge KOCH Spray Booth.

This down-draft, water-wash unit, especially designed by KOCH engineers, accommodates an entire wing section which is carried in and out of the booth on an overhead monorail.

Fresh conditioned air enters through the top gratings. Overspray and fumes are drawn through the floor-gratings where they are washed free of all inflammables before being expelled.

The results are greater safety and health-protection for the worker . . . and faster, steadier production of finished wings.

This is but one of the many instances where KOCH engineers have helped war manufacturers improve and speed up finishing operations. KOCH spray booths, force-drying systems, and baking ovens, both standard and custom-built, are giving dependable performance in many of America's most vital war plants.

**Let Koch Engineers Help You Get Dependable Production in Your Finishing Department**

Koch engineers are ready to assist you in designing and installing a complete new finishing system or any part of one. Their help is yours for the asking!

**For Complete Information—Phone, Wire or Write Today**

GEORGE KOCH SONS, INC.

MAKERS OF *Industrial Equipment*

EVANSVILLE, INDIANA

# SUGGESTED METHODS OF FINISHING

# *Redwood Caskets*

BY C. J. DEXTER

REDWOOD is being used extensively in the manufacture of burial caskets. It is light in weight, soft and easily worked, and very durable. However, it has peculiarities which must be taken into consideration if it is to be worked and finished satisfactorily. Before it is machined and assembled into caskets, the wood must be uniformly dry so that it contains no more than say 10% and no less than 5% moisture content. And, of course, this condition of uniform dryness must prevail throughout all factory operations.

In the assembly department it is essential to use a suitable water putty for filling nail holes and slight defects or bruises in the wood, which is very soft. The putty should be non-shrinkable and contain no oil. It can be colored with water stain colors. Some putties used for this work consist of a filler of fine redwood sawdust mixed with glue to make a heavy paste.

After the puttied spots are entirely dry the casket shell should be sanded smooth with No. 3/0 sandpaper. This is important in the interest of saving both labor and material in the finishing department.

Some failures have occurred in redwood casket construction because of glue joints opening after the finishing material had been applied. Open joints are evidence of improper drying of the lumber, faulty machined joints, unsatisfactory glue or incorrect clamping. When open joints show up, the shells should be returned to the cabinet department for repairing. The finishing department should not be obliged to accept cabinet work or casket shells that have open glue joints.

A method of sealing redwood which has proved highly satisfactory here on the Pacific coast, for both clear and opaque finishes, is as follows: The shell is coated inside and out with a specially formulated oil primer that seals the wood. It is a "short-oil" type of primer and is reduced 25% with VMP naphtha or white gasoline. It has excellent sealing qualities as well as good coverage—and, when allowed an overnight drying, it is not affected by any following coats of lacquer. Best results are obtained by applying a heavy coat of this material.

Any pits and small indentations that were missed previously should be puttied with a pyroxylin putty, following the primer coat.

After drying overnight the prime-coated surface is sanded with No. 5/0 sandpaper. This is followed with a lacquer undercoat which gives additional "build" and sealing quality to the foundation of

## There is No Such Thing as a Little Problem in Wartime Finishing

The color of oars for rubber rafts carried by ocean flying military aircraft might seem to be a minor finishing problem.

Yet the courageous men who have lived through the horror of starvation, sun, wind and sharks during endless days and nights on the limitless blue Pacific know better.

Their gripping story of extraordinary heroism and terrible suffering revealed the fact that natural wood finished oars *attracted* deadly sharks. They apparently mistook the oars for human hands and legs.

As a result, it was quickly decided to change the color of oars to a sea blue and Lowe Brothers cooperated to develop an approved finish which is now being used.

The point is, there is no such thing as a little problem in the finishing of war weapons, equipment or materiel. And Lowe Brothers broad experience with U. S. Government Specifications and other industrial finishes may be helpful to you — as it has to many others.

*INDUSTRIAL SALES*
THE LOWE BROTHERS CO.
DAYTON, OHIO

*Lowe Brothers*
**WARTIME FINISHES** *for Industry*
IN ACCORDANCE WITH U.S. GOVERNMENT SPECIFICATIONS

the finish. When thoroughly dry the surface should be carefully sanded—dry sanded, or wet-sanded with No. 280 waterproof paper. The wetting agent for wet sanding can be "Varsol" or some special sanding liquid. Water should not be used because some of it is bound to reach the wood and, as a result, you may have such troubles as swelling of the wood, raising of the grain, opening of glue joints, etc.

### Grained Finishes and How They Are Produced

If a grained finish is desired, the surface is sprayed with a colored lacquer ground coat of the required shade. Oak, walnut and mahogany are popular colors for grained finishes. After the ground coat has dried for three to five hours, depending upon room temperature, it is wet-sanded with No. 280 waterproof sandpaper. The casket shells are carefully cleaned and taken to the graining department where their surfaces are printed in a grained effect with graining ink.

There are several methods of graining and if the correct procedure is followed, some beautiful effects can be obtained. Probably the best known production method is the one wherein an etched copper plate is employed. This etched plate, resting on a level table, is inked, the excess ink scraped off, and a composition roller is carefully rolled over the plate to pick up the remaining ink from etched depressions. This roller, with its inked impression, is then carefully rolled over the ground-coated surface, on to which it transfers the graining in exactly the same pattern that is etched on the copper plate.

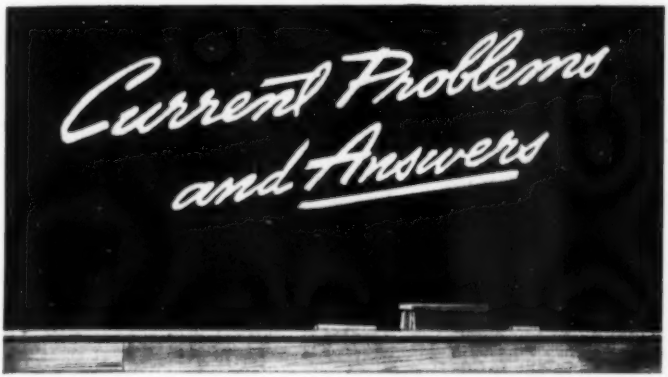
Still another method of graining that is popular on the Pacific Coast is to use natural wood boards that are carefully selected for their attractive graining. Many different kinds are available. These boards are used instead of the etched copper plate. Several designs in oak, walnut and mahogany can be prepared for wood graining and you have a variety of different grained patterns at low cost. The natural wood graining plates are etched by sandblasting or with acid solutions to slightly cut away or depress the soft wood in varying depths below the harder more durable grain. Once the wood graining plates are prepared, they are mounted and used the same as copper plates.

After the graining ink has been applied the shells are then left to dry for three to five hours, depending upon room temperature. If controlled drying is available, the drying can be speeded up to allow more caskets to be grained per day. Graining equipment must be kept clean at all times. It should be kept and used in a place that is entirely free from dust. VMP naphtha is generally used for cleaning this equipment.

Following the graining and drying, a lacquer sealer is sprayed over the surface. When dry, this coating is lightly sanded to a very smooth surface with No. 6/0 sandpaper. The surface is now ready to be sprayed with one or more coatings of clear gloss lacquer. Freshly lacquered shells are allowed to dry until the next day when the surface is given its final rubbing and polishing.

### Metallic Finishes on Wood Caskets

Metallic finishes are quite popular for caskets. When these finishes are used a finer grade of sandpaper is used for sanding the lacquer undercoat because a greater degree of smoothness is required. After the coat of all-metallic finish




## Problem No. 5 — What Can a Small Shop Do to Get Emergency Work?

Many a finishing shop forced into near-idleness by lack of contracts for war materials is faced with the serious problem of getting enough work to keep going.

## The Answer:

One enterprising finisher solved the problem by setting up a crown seal refinishing business. Every brewer and soft-drink bottler collects a tremendous number of used crowns with returned bottles. These crowns must be refinished before they can be used again, and the bottler has no facilities for doing the job. Here is a good business with a handsome profit going begging in most cities. Why not go after it? All you need is a tumbling machine and Watson-Standard Tumble Enamel—the most practical and economical finish for bottle caps. Write today for samples.

**WATSON-STANDARD CO.**

Manufacturers of
PAINTS · VARNISHES · INDUSTRIAL
FINISHES AND LITHOGRAPH COATINGS

FACTORY AND GENERAL OFFICES:
PITTSBURGH, PA. · WAREHOUSES:
BOSTON, BUFFALO, DETROIT, NEW YORK

TOUGH JOB HEADQUARTERS
℞ Prescription Finishes
Give us your metal coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.

has been applied, it is the practice in some factories to shade the corners and edges with "statuary" colors or finely ground pigment colors which are added to clear lacquer. The corners and tops of caskets are shaded to blend with the all-over metallic color of the shells. For example, a very light shade of blue-black color over light gray makes an excellent color combination. In casket finishing this is known as "point shading."

The shaded metallic finish is then given two or three coats of gloss lacquer, followed, when dry, with rubbing and polishing operations. If a satin finish is desired, a flat lacquer is used instead of the final coats of gloss lacquer. Where satin finishes are used, only one coat of satin lacquer is applied.

## Spray Painters and Finishers

WITH LABOR conditions becoming more critical every day, we find expert spray painters being made almost over night in the modern war plants. A skilled finisher who learned the hard way may wonder what kind of conditions he may find after the war.

I happen to be one of many who left a peace-time position as department head and took a job in a California aircraft plant shortly before the war started. I have seen spray-gun operators come and go by the dozens. I have talked with them and learned their background and experience. Most of them were competent men—they had to be if they held their jobs—but not one in 20 had the qualities necessary to keep a shop running at full speed and to turn out a high-class perfection finish for a competitive market.

Occasionally I meet a fellow who wears a pained expression and reminiscent look in his eye. I know that this man is a real finisher who has probably painted Cadillac automobiles or Steinway pianos, and I know how tired he gets of working with only flat O.D. paint.

After the war it is only reasonable to expect that these skilled finishers can be absorbed by the refrigerator, automotive and radio industries, and by the makers of those hundreds of other luxury items we must now forego until after the war is won.—AL.

## Have You a Suggestion to Help Win the War?

At the Engineer School, Fort Belvoir, Virginia, incoming mail is read with eager anticipation, for this school operates a suggestion system. Any envelope in any day's mail may be drama-drenched and thrill-freighted with a revolutionary suggestion that will speed victory.

The suggestion system is more than a year old. To date 11% of the suggestions have been approved and put to use. More suggestions are wanted. An extensive campaign to promote suggestions has been started. Illustrated posters have been distributed for platoon bulletin boards of engineer organizations. New posters will be distributed each month. Engineer soldiers are authorized to send suggestions direct without going through other military channels.

Civilians also are welcome to send suggestions. No useful idea is too small to report. Every idea is judged by competent critics. Every suggestion is copied and submitted to the critics without any indication of its source. Approval does not depend on rank or influence. The private and the brigadier are treated alike. Each suggestion wins in the American Way—solely on its own merits.

## Magnus Chemical Announces Wire-Coating Division

The Magnus Chemical Co., Inc., Garwood, N. J., announces the appointment of Mr. H. L. Trembicki as manager of its newly organized Wire-Coating Division. Mr. Trembicki will specialize in servicing the wire and steel industries with a new process which will also be extended to include deep drawing of steel and other metals.

## *In Walker's Protective Coatings*

It is taking World War II to demonstrate what is meant by S-P-E-E-D in product coating.

SPEED is embodied in Walker's Protective Coatings to meet wartime coating specifications—such speed in application and drying unheard of or thought possible.

It's SPEED plus in product coating that breaks a finishing room bottleneck. You'll find speed plus, satisfaction plus and durability in Walker's finishes . .

**PRIMERS SURFACERS LACQUERS**
**SYNTHETICS WRINKLES**

## *"Call on Walker"*

**H. V. WALKER CO.**
Elizabeth, New Jersey
MODERN PRODUCTION FINISHES

# Materials Supplies Equipment

## Metallic Finish for Wood Caskets

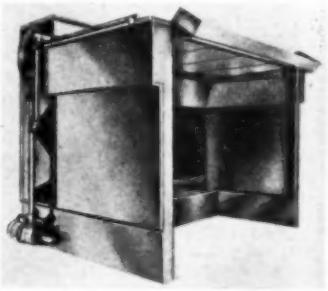
The Stille-Young Corp., Chicago, Ill., announces a new stipple finish (splatter paste) for the production of a metallic finish on wood. It has already been successfully used on wood caskets and on many specialty items not in the same field, such as display cases and novelties of various types. When sprayed on cypress, redwood and poplar woods, the finish completely hides all trace of the wood grain.

The new finish is a beautiful hammered metal (stippled) effect. The finish is hard, impervious to abrasions, and definitely more durable than metallic finishes the trade has been accustomed to using. The procedure is not complicated and is not expensive. It will fit in with any production schedule. Its use completely eliminates the sanding operation which, with today's labor shortage, is a point for important consideration.

## Aqua-Restor Water-Wash Spray Booth

The accompanying illustration shows Type FLRS-7, standardized floor-type Aqua-Restor paint spray booth, featuring rear and side water-impingement walls. This unit employs the patented Aqua-Restor super-turbulent chamber, which is said to be gaining wide favor in war plants in many parts of the country. Developed to meet high-speed, high-standard war production spraying requirements, these booths offer excellent painting speed, with real safeguards for workers. Fire hazards are greatly reduced.

In operation, the side and rear walls of this paint spray booth are continuously covered with a sheet of water which is completely controlled. Workers and articles being painted are never showered. Because the Aqua-Restor method of air cleaning requires no spray nozzles or moving parts, work stoppages for servicing are reduced to a minimum. Additional economies are effected through low power pumping needs.



A new type of water-wash booth.

High reclamation averages are reported for all types of pigments. The unit shown here is available in all sizes, equipped for fluorescent lighting. Other types are engineered to meet specific production requirements.

Bulletins, specification sheets and other data are available from Aqua-Restor Div., Mayer Mfg. Corp., 43-53 Division Place, Brooklyn, N. Y.

## Cleans Goggles

The new M. S. A. Goggle Cleaning Station, announced by Mine Safety Appliances Co., Pittsburgh, Penna., encourages workers to wear their goggles and to keep them clean.

Designed for convenient wall mount-

**LACQUERS**
**SEALERS**
**SHELLAC**
**STAINS • GLAZES**
**ENAMELS**
**UNDERCOATS**
•
**NOVELTY FINISHES**

**IN STEP WITH THE TIMES**

*Industrial Finishes*
*that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.*

• **FOR APPLICATION BY ALL METHODS**

**JAMES B. DAY & CO., CHICAGO**

ing anywhere in the plant, the unit consists of a compact case equipped with Fogpruf, an efficient lens-cleaning and anti-fogging agent, and optical wiping tissues. A tap on the inverted vial sprays Fogpruf on the goggle or spectacle lens. Cleaning tissues are pulled from the opening in the top of the station, and may be discarded in a receptacle in the lower part of the case.

## Airconditioner Unit for Compressed Airline

Paasche Airbrush Co., 1917 Diversey Parkway, Chicago, Ill., announces a new type air conditioner unit for removing water, oil and dirt from the compressed airline. It is a definite improvement over all previous types, a fact which has been proved in actual tests where the unit proved to be 96% efficient.

Supplied in five sizes, with one to three outlets.

The unit is constructed of non-corrosive metal throughout and filtration is mechanical with no moving parts. No cotton, felt or fibrous filtering elements are employed that require frequent replacement.

All air conditioner units can be supplied with the new Paasche water drain which automatically discharges water as it accumulates. This eliminates daily hand-draining and prevents the trouble brought on by neglect of this important duty. The drain operates on a new principle which provides a reliable method for water removal under all conditions. Operation is simple and foolproof.

Incorporated in the new unit is a Paasche air-regulator, insuring precise regulation of working air-pressures and providing such features as the streamlined, machined brass body and pressure locking adjustment assemblies. The distinctive design of the regulator is an important factor in the large air capacity of the unit, which greatly increases the utility range.

## Protects Metal Against Corrosion

A new greaseproof, non-corrosive paper protects highly finished metal parts against corrosion. Called "V-26," this protective wrapping paper is described as a new development in the packing of war materials. It eliminates multiple wrapping operations at point of use, thereby permitting substantial savings in time. The new product, which is reported to meet or surpass all government specifications for greaseproof, non-corrosive papers, was developed by Sherman Paper Products Corp., Newton Upper Falls, Mass., working in conjunction with the armed services and war industries. The product has been widely tested in a diversified group of factories, including aircraft, automotive, truck, tank, and other types of ordnance factories.

Multiple wrapping operations are eliminated by combining two protective laminations in one paper. The

THE ART OF

## *GETTING ATTENTION*

The finish of a product can be attention compelling . . . it can make you look, admire and respect.

To give commercial products attention-compelling finishes is the purpose of our Creative Studio. Our art staff conceives artistic, practical finishing schemes for products of wood or metal. This service is rendered without cost to reputable firms.

If it's protective coatings for war products you need, we can meet your requirements and U. S. Government specifications with materials that stand up under the toughest conditions imaginable.

*No Tampering with Quality*

*Write us about your requirements.*

ROCKFORD VARNISH *Company*
ROCKFORD ILLINOIS

*Manufacturers of Protective and Decorative Coatings*

inner ply provides a greaseproof barrier for the retention of corrosion-preventives used on metal products, while a strong outer ply protects the greaseproof membrane against damage in transit. Both inner and outer laminations are non-corrosive, consisting of neutral kraft, colored red in accordance with government specifications for Grade A non-corrosive papers. Both are creped for greater flexibility in wrapping, with a dead-limp folding quality. The new line is available either with an outer film of wax that provides a self-sealing surface, or uncoated where the self-tack quality is not needed.

Sherman's V-26 is distributed nationally through the paper jobbers who are now handling the company's Corroflex line.

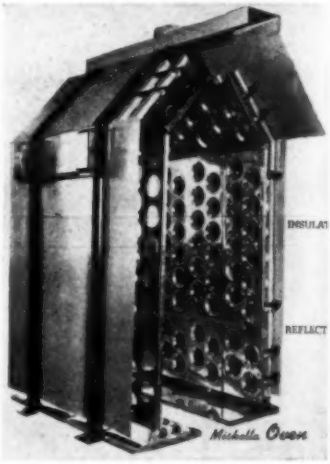
## Fireproof Oil-Absorbent Sweeping Compound

Fibre-Tex is the name of a new floor-cleaning compound which eliminates the danger of fire. The product doesn't burn even when the flame of a blowtorch is played directly upon it —nor as the result of spontaneous combustion. It is highly absorbent of oils and grease and has an active cleaning effect upon floors on which it is consistently applied. Its use is indicated in industrial plants generally. Fibre-Tex is manufactured by Lacey-Webber Co., Kalamazoo, Mich.

## Infra-red Insulated Reflective Oven

Infra-Red Engineers & Designers, 1632 E. 40th St., Cleveland, Ohio, announces standardized infra-red oven sections which can be arranged and set up as desired to provide baking ovens or tunnels. After the war, when other production plans will be put into operation, these standard infra-red sections can be rearranged or regrouped to take care of new requirements.

Infra-red heat originates in long-life incandescent lamps and depends upon proper reflection to direct the heat rays on the work in process. Heating is almost instantaneous. Paint and enamel coatings are completely baked in from 30 seconds to 20 minutes, depending on conditions.




It is assembled from standard sections.

The Miskella infra-red oven combines the features of the heavily insulated convection baking ovens with those of the new infra-red method which delivers the heat rays directly to the product in process without intermediate transfer of heat. All panels are in standardized sections—insulated-reflective and filled with Fiberglas. Sections are completely wired ready ot connect to electric service.

Lamps are scientifically staggered to spread out uniformly so as to get the most out of the 250-watt unit lamps sealed in vacuum with individual parabolic reflector protected from fume contamination. Maintenance problems are so simplified that cleaning need be done only once a month. All surfaces are smooth and flat—even the cones that surround the lamps.

In addition to the primary air circulation upward within the oven

Now comes another important addition to the PREP line of metal cleaning and conditioning products for paint . . . a new type of scale remover for removing Mill Scale, Annealing Scale and other types of scale from ferrous metals. It is not corrosive on surrounding plant equipment . . . no fumes . . . non-inflammable . . . . and less hazardous. It requires only one water rinse when used in conjunction with painting operations which follow the pickling.

**WRITE FOR FURTHER DETAILS**

## NEILSON CHEMICAL COMPANY

**6544 Benson St., Detroit, Michigan**

Los Angeles, Calif.

Windsor, Ont. Canada

proper, there is the secondary air circulation which meets the primary air in the fume duct above, and where both join and go out the chimney together. The secondary air flow continues to function even with the primary flow cut off. Secondary air passes between back of insulated-reflective panels and exterior covering of oven. Fume ducts are sectional and easily removable.

## Makes Factory Cleaning Easier

The importance of keeping windows clean is being stressed throughout industry, in order to get fullest benefit of free natural light, which is so necessary to increased production, precision work and inspection. Ordinary washing usually will not remove rust, shop dirt and stains from factory windows. The necessity of the dangerous and costly acid bath is eliminated by "Bull Frog" Saf-T-Klenz, a product of the Berman Chemical Co., 304 Tenth St., Toledo, Ohio, which is being introduced to industry for that purpose. It comes in convenient non-deteriorating dry powder form, and is unconditionally guaranteed. Generous free trial sample will be sent on request.

Saf-T-Klenz speedily removes iron rust, lime deposit, soap oils, body grease and discolorations from shower room floors and walls, wash bowls, toilet bowls and fountains. It causes obnoxious odors to immediately vanish. Tiresome, frequent scrubbing, necessary with ordinary cleaners, is eliminated and the use of dangerous acids made unnecessary.

Saf-T-Klenz contains nothing harmful to the skin, clothing or drains, and creates no fumes. It leaves the flow of shower rooms absolutely slip-proof, an important consideration in view of the appalling loss of man hours due to accidental slipping. Saf-T-Klenz at the same time minimizes the conditions that breed and distribute athlete's foot, ringworm and similar diseases.

## Allows Spraying From Original Container

Master Mfg. Co., 4715 N. Damen Ave., Chicago, Ill., announces a special cover that clamps over ordinary

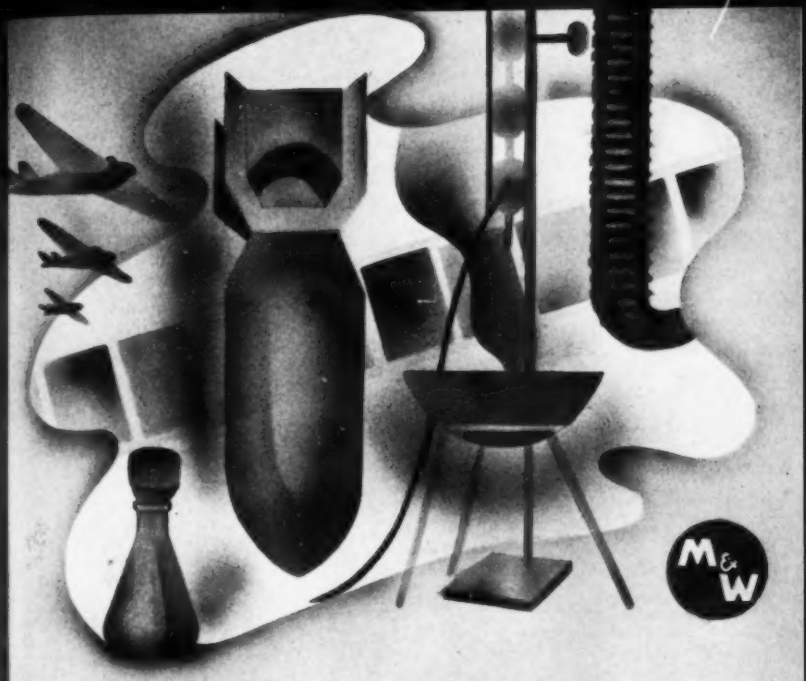
Fits most quart-size cans

one-quart friction-top paint cans, making it possible to attach the can to a spray gun and spray its contents directly by syphon-feed from paint can to surface being painted. In other words, the original paint can becomes the material cup for a cup spray gun.

## Agitation for Uniform Dipped Finishes

A solution to the problem of obtaining dipped finishes that will meet Army specifications is offered in the "Lightnin" propeller-type agitator manufactured by Mixing Equipment Co., Rochester, N. Y.

This agitation unit is easily installed in the tank, where it will furnish constant agitation 24 hours a day without interruption. Its powerful mixing action provides a top to bottom turnover and slow rotation of the tank's contents. This, in turn, drives pigments from the bottom of the tank and keeps them uniformly suspended. It com-




# Thousands of Finishing Material Formulae!

OUR file of thousands of finishing material formulae symbolizes the technical knowledge of this organization, accumulated during its 67 years of business life. ☆ This background of information, and the practical experience in applying it, is available to armament manufacturers with special finishing problems, either in material or method of application. ☆ In many cases we have been helpful in speeding production by eliminating finishing-room bottlenecks and in helping manufacturers adapt present equipment for use on a specific contract. ☆ Our booklet, "Information on U. S. Government Specification Finishes," contains a revised and up-to-date list of Government specifications and the M & W finishes which meet them. ☆ Send for your copy today.

## MAAS & WALDSTEIN COMPANY, NEWARK, N. J.

PRODUCERS OF LACQUERS, ENAMELS, SYNTHETICS AND SPECIALTY FINISHES FOR ALL PURPOSES

BRANCH OFFICES & WAREHOUSES: 1658 CARROLL AVE., CHICAGO, ILL. • 1228 W. PICO BLVD., LOS ANGELES, CALIF.

pletely eliminates "dead spots" in the tank, prevents settling even in heavy pigmented paints and thoroughly mixes in the thinner to make up for evaporation losses.

With this equipment, the last part to be dipped gets a coating that is the equivalent to that of the first part. It is merely necessary to maintain the proper ingredients in the tank; the agitator does the rest of the work for you.

In plants where this agitator has been installed, dipping operations have been speeded up and rejections due to faulty finishes have been decreased to a minimum. Many users claim that the wave-like motion of the surface gives results equivalent to best hand-dipping, and that drips and runs are decreased.

## Varnish Stripper
### (Prevents Varnish Sticking)

A stripping medium, designated as Sterling S-159 Stripper, which provides fast and easy removal of insulating varnish from portions of the electrical equipment where varnish is not desired, has been developed by The Sterling Varnish Co., 141 Ohio River Blvd., Haysville (suburb of Pittsburgh), Pa.

Time of complete finishing of armatures, stators, rotors and other electrical units with insulating varnish has been measurably reduced with the introduction of Sterling S-159 Stripper. It eliminates the tedious and harmful scraping methods heretofore employed in removing varnish which may have splashed or drained on parts of the apparatus which should be varnish-free.

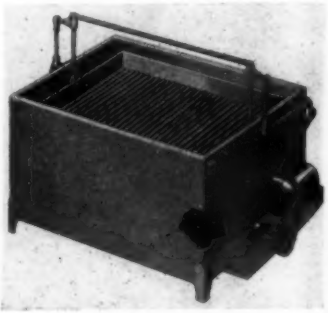
Sterling S-159 Stripper is a blue viscous liquid which is brushed on machined surfaces or other metal parts prior to the actual application of the varnish to the piece as a whole. S-159 dries in two or three minutes after which the varnish is applied in the usual manner; dipping, spraying or brushing; dried at normal or elevated temperatures.

When the complete varnish treatments are finished, any varnish which has adhered to the portions previously treated with the S-159 Stripper can be easily and rapidly removed with a wood or bakelite knife, without marring or otherwise disturbing the exact and close tolerances.

## Up and Down Dipping Cleans Small Parts

A newly designed metal-parts washer is announced by the Sturdy-Bilt Equipment Corp., West Allis (Milwaukee), Wisc.

Parts to be cleaned are dumped into a metal tray which has a bottom made



**Dips the loaded tray into the cleaning solution and withdraws it repeatedly.**

of narrow slats. This tray is mounted in such a way that, automatically and by power, it repeatedly dips the parts into and withdraws them from a suitable cleaning solution in the tank. This repeated dipping and withdrawing—simulating a gentle flow-on and flow-off of cleaning solution—provides a soaking and washing action that positively removes all foreign material. A hot or cold solution may be used.

The tank is fully insulated and the cleaning solution can be heated to a temperature of 120° to 130° F. in a short time by means of steam, electricity or gas. An electric motor operates a simple lever mechanism which lowers and raises the material tray into and out of the soaking tank. The

# TUF-ON
## PLYWOOD
## FINISHING SYSTEMS

## TRAINERS · GLIDERS · CARGO SHIPS

**OVER SEVEN YEARS OF PROVEN PERFORMANCE**

Data on new systems of Tuf-On Finishes and schedules are now available. They meet government aeronautical specifications, so approval for their use may be obtained. Send for a copy of "TUF-ON Finishes and Schedules".

**INDUSTRIAL RESEARCH DIVISION**
WIPE-ON CORPORATION, 105 HUDSON STREET, NEW YORK

operator loads the tray, presses a switch and the "Simplex" does the rest. The "Simplex" is furnished in three practical sizes.

## Protects Workers' Skin From Shop Irritants

Due to the change in personnel from masculine to feminine employes, a demand has appeared for a skin-protective cream or lotion. For instance, in a chemical plant where a certain product was being produced, a serious hazard was created by mixing certain chemicals which, upon being mixed, set up a vicious reaction that set off heavy fumes. These fumes attacked all exposed skin of every worker within the walls of the plant. Another plant processing ammonium nitrate required a product that would give protection against irritation by this chemical.

Pro-Tek-Tor No. 6 was improved upon to meet the demand of women workers. This product is now made of lanolin and other oils. It is made up in a liquid emulsion (lotion) with a pH of 8.2. It is safe to use on the face as well as on hands and arms, and dries upon application. It is ideal for protection against irritation from contact with cutting and lubricating oils, kerosene, petroleum solvents, thinners, lacquer, paint, ink, etc.

This material, available in pint bottles, is a product of Nielco Chemical Co., Redford Station, Detroit, Mich.

## Carbon Met. Replaces Carbon Tet.

A unique and valuable solvent developed to serve as a substitute for carbon tetrachloride is now widely used for cleaning metal parts in war production plants. It was worked out in the laboratories of the Curran Corp., Malden, Mass.

The newly developed solvent is described by the company's research director as a volatile, water-white methalated hydrocarbon solvent which evaporates and which is characterized by its quick and powerful cleaning as well as dissolving action on gums, oxidized oils, burnishing compounds, etc.

The new product is said to be 14 times faster than naphtha for cutting gummy and tarry dirt. It is a "non-polar" solvent and unlike the chlorinated solvents, induces no corrosive or rusting tendency of ferrous metals; also it is much less toxic than carbon tetrochloride, which it is intended to replace.

In the Army, Navy, Marine Corps, or any branch of war and industry, this new product might be said, in layman's language, to: "Eliminate the acid touch of fingers. This new product, by eliminating body perspiration of the fingers on metal thus prevents rusting and oxidation of such metals.

## Measures Thickness of Coatings

Do you have occasion to measure accurately the thickness of paint coatings on flat or curved metal surfaces—without damaging the coatings or metal at the areas measured? A quick accurate way to do this is to use a portable instrument called "Magne-Gage." No extensive training is required to operate the Magne-Gage successfully. Complete and easily followed instructions for its use are supplied with each instrument.

The Magne-Gage is a product of the American Instrument Co., 8010 Georgia Ave., Silver Spring, Md.

## Shop Suggestions

THE ADOPTION of many labor-saving procedures of the year may be accredited to the employe-suggestion plan used in most large war plants. A worker is free to drop his written suggestion in the box at any time. If the idea is worthy and practicable he may be rewarded with a handsome gift in the form of cash, war bonds or stamps.—Y. Z.

# An Improved WOOD SEALER

● A new and unusual lacquer type wood sealer, developed for use by furniture manufacturers. It possesses many unusual qualities, foremost of which is its ability as a shellac substitute.

It is used to seal bare wood for the application of subsequent coats of clear or pigmented products which can be lacquer, synthetic or oleoresinous type. Applied preferably by spray. Air dries in 30 minutes. Clear color (but not pale).

This improved wood sealer provides unusual sealing, "build" and sanding properties. Let us quote on your requirements.

DATA SHEETS: Detailed, up-to-the-minute information on use and application—covering a variety of industrial finishes, including approved war material finishes. Sent on request.

O'BRIEN VARNISH CO., South Bend, Ind.

**O'BRIEN**

**INDUSTRIAL FINISHES**

***Not the Most • • Just the Best***

SINCE 1875

# Questions and Answers

## Bronze Finish on Doors

We have a customer who wishes to finish outside doors in an imitation bronze. This firm has in mind a finish similar to that applied to the exterior doors in the St. Louis Cathedral, St. Louis, Mo. If you can give us an opinion as to how to arrive at this type of finishing we will appreciate it.—C. F. Co. (Modern Store Equipment.)

To finish hardwood in imitation bronze, the following will give a satisfactory and durable external finish. I assume that the doors will be made of well seasoned maple or birch. They should come to the finishing room free from all machine marks. The surface grain should be raised with a 2% caustic solution and allowed to dry. Sand lightly with fine sandpaper to make the surfaces perfectly smooth. Apply a prime coat filler which will aid in waterproofing the wood. For this I suggest a filler thoroughly mixed and consisting of the following:

| | | |
|---|---|---|
| Natural paste filler | (lbs.) | 3 |
| Raw linseed oil | (quarts) | 1 |
| Mineral spirits | (gallons) | 1 |

The filler is brushed thoroughly into the pores of the wood and cleaned up in the usual way. After it dries thoroughly the filled surface is smoothed up with sandpaper to make it ready for the first coat of bronze. The vehicle for the bronze powders should be a good grade of outside spar varnish. Put this on thin. Don't try to make it so "heavy" that it hides the wood—not on the first coat. Use a thin mixture and apply a wet coat, so it will penetrate into the wood as far as possible and thereby form a secure anchorage for succeeding coats.

Let this first thin coat of bronze dry thoroughly. Sand the surface smooth, using wet-or-dry sandpaper and water. Take care to avoid cutting any edges or sanding through.

Clean the sanded surface and apply the second coat, which may be as dense as possible. The finish can be built up to the desired metallic depth, taking care to water-sand between coats. If any antiquing or highlighting is to be done, it should be applied after the last coat of bronze is put on. Follow with one or two coats of outside spar varnish, letting each coat dry thoroughly. Water-sand and dull rub with pumice stone and oil, applied with burlap.—F. R. BOYNTON.

Your first step is to get the doors into proper condition, whether they are new or old, metal or wood. If the doors are old, the old finish should be smooth and in good condition if you expect to work over it. Otherwise, if the finish is not in good condition, it should be removed. Then apply a ground coat tinted with French ocher, if gold bronze is to be used. If a copper bronze tint is desired, tint your paint with a mixture of French ocher and burnt sienna to a color near your bronze. Use a flat color. It will be necessary to apply at least three coats of this ground coat, allowing each coat to dry

As clear wood lacquer becomes increasingly scarce

TYPE C *NON-LIMITATION*

CLEAR FINISH

BECOMES INCREASINGLY

MORE IMPORTANT.

•

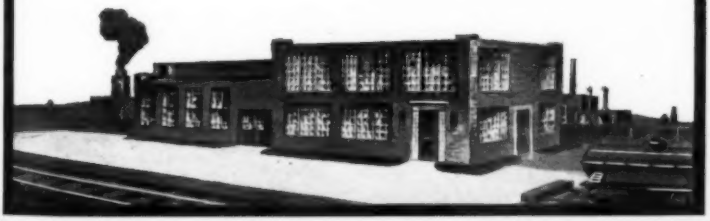
*INVESTIGATE!*

*Phone, Wire or Write*

**RANDOLPH**

**FINISHING PRODUCTS CO.**

Carlstadt New Jersey



thoroughly and then sanding the surface smooth.

Now apply a thin coat, followed by a heavy coat of gold or copper bronze, mixed with spar varnish for outside exposure. After this is dry and hard, rub down the surface and apply a glaze coat of burnt umber thinned with linseed oil, turpentine and drier. Coat with this and rub off to give the finish an aged appearance — or at least use this glaze enough to dull the bright dazzling appearance of the gold or copper.

Now that you have your color, finish with one or mort protective coats of clear spar varnish. If copper bronze is used, you may want to make up a thin coat of light green and wipe this on to make the surface look like verdigris in copper. By making up some panels you can try your colors before going ahead on your actual work. I have done doors and woodwork in this way and it gives an excellent appearance of the real thing.—J. K. COOPER.

## Filling Oak

We have experienced some difficulty with the filler we are using on plain red oak. Even though we exercise considerable care in doing the filling, when the work is finished with one coat of sanding sealer and two coats of rubbed-effect lacquer, the pores in the wood show, the filler apparently having shrunken.

Any helpful suggestions you are able to give us, that will tend to overcome this trouble, will be greatly appreciated.— B. J. Co. (Cabinet Work.)

Be sure that the filler you use is a non-shrink type of filler. See that the filler is properly prepared, correctly applied, and well padded into the pores of the wood. Also, be sure that it is thoroughly dry before you apply your coat of sanding sealer. Some finishers would resort to a double filling, but this should not be necessary if the first precautions given here are followed.

Read the article, "Trouble in Finishing Oak Furniture," which also appears in this section.—ED.

## Painting Over Waxed Woodwork

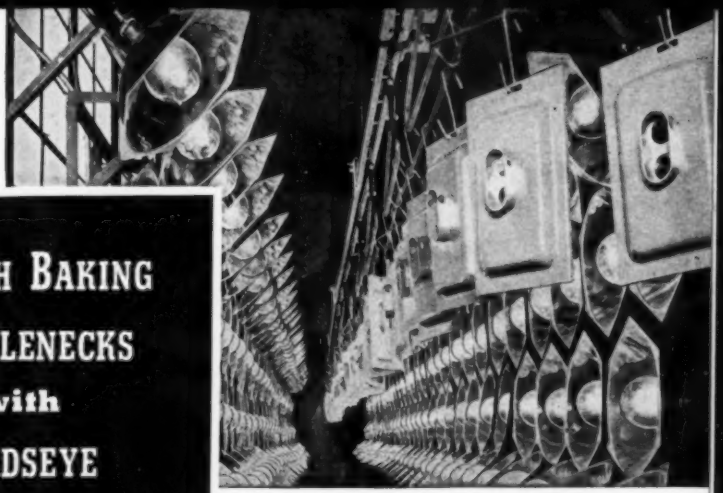
We would like to know the most effective and easiest way to remove wax from walnut woodwork so that a white semi-gloss paint may be applied. Also, let us know what kind of first coat would be best to use after cleaning off the wax in order to keep the white paint from chipping.

If there is a first coat of some type that can be used right over the wax finish, without first cleaning off the wax, this would save a lot of time, so we would like to know if there is a finish of this type on the market.—I. C. Co.

You will have to wash off the wax from your surfaces before painting. Otherwise your paint will not stay on permanently. Practical finishers recommend washing the waxed surfaces with naphtha or a solution of sal soda. If you wash the surface with naphtha you will need to follow up by washing with a weak solution of sal soda.

Following the sal soda wash (by sponging probably) give the surface a clear water rinse and then wipe it dry.

If you want a nice smooth surface and wish to make sure that the paint will adhere satisfactorily, we recommend that you follow these cleaning operations with a



# BANISH BAKING BOTTLENECKS with BIRDSEYE INFRA-RED

## Save up to 95% in Finishing Time AND Get Better Bakes!

Industrial leaders from coast to coast now use Infra-Red for *better, faster, cheaper, easier* baking, drying, and dehydrating. Square-D (see photo above), Allis-Chalmers, Bulldog Electric, Curtiss-Wright, Dow Chemical and many others have adopted Birdseye Heat Lamps after exhaustive tests in use.

Instead of drying slowly inward from the surface, Birdseye infra-red rays penetrate deep down into lacquers, paints and enamels to start *instant baking from the inside out.* The results are sensational savings in time, as well as more uniform and lasting finishes.

Birdseye tungsten-filament Infra-Red Heat Lamps come in thirteen types and sizes. Economic 6000-hour average life. Write today for Booklet N-4.

# BIRDSEYE INFRA-RED HEAT LAMPS

**WABASH APPLIANCE CORPORATION**

343 CARROLL STREET, BROOKLYN, N. Y.

*Manufacturers of Wabash Photolamps and Superlite Light Conditioning Bulbs*

light sanding with No. 5/0 sandpaper.

Now, to be sure of sealing the prepared surface properly, and providing good adhesion, apply a thin coat of shellac. Then follow with one or two thin coats of flat white undercoater. You are now ready for your semi-gloss white paint—and you can be assured that it will "stay put."

What is outlined here may not seem to be an easy way to do the job, but it is the satisfactory way. —B. F.

## Trouble in Finishing Oak Furniture

Referring to a question under the above title, appearing on page 72 of March 1943 issue, I would suggest that you make sure that your stain is thoroughly dry before you do any filling; and also be sure that the filler is dry before putting on the sealer.

Any of these things can cause the trouble you mention, because oak has deep pores in the wood. If the stain is not dry underneath the filler, it will be trapped there by the filler being padded in on top of it. I suggest a combination stain and filler, and let it have plenty of time to dry before attempting to put on the finish. I know that finishing schedules are being speeded up these days, but this can only be done safely to a certain point. Going beyond that will mean trouble.

The sealer or sanding coat is important also. This coat should have elasticity to withstand the expansion and contraction of the wood due to changing weather conditions. If this is done, no trouble should result. I have in mind a good material to use under varnish, as it has good sealing properties as well as being waterproof and is not hard to sand. Also, it holds out the varnish coats well, but it must be thoroughly dry before sanding which, in my case, takes from four to five hours. (It has been advertised in this magazine for years.)

I would suggest that you read Raymond C. Adams' excellent article on lacquer sealer, which begins on page 50 of March 1943 issue of INDUSTRIAL FINISHING. In fact, every finisher should read it, as well as factory superintendents and general managers. This article is "right up my alley," as I have always contended that high grade finishing materials are the cheapest in the long run. This has been my experience. The products I have finished for years have not given us any trouble after being sent to the customer, due to the fact that we have stressed cleanliness in the paint room and in the application of materials, and we have used good materials and paid particular attention to the drying of coatings made from these materials.

Also, another thing that would help a lot of finishing rooms would be for the companies to send as many of their spray hands, or at least the foreman, to the spray-painting school, which is put on free of charge by an advertiser in this magazine. I went up there a couple of years ago for a week and learned things about spray equipment and the handling of spray guns that I did not know and could get only by going to school; and incidentally, I had been handling spray equipment ever since it came into general use.

A lot of material can be saved by: 1) the proper handling of spray guns; 2) using the proper air pressures; 3) spraying the proper pattern on the work; 4)

TESTORS

# Plywood AIRCRAFT FINISHES

TESTOR CHEMICAL CO. TESTORS ROCKFORD, ILL., U.S.A.

## CONTROL LABORATORY DATA SHEET

SURFACER: WOOD, LIQUID
PRODUCT

14113 Army Air Force — SPECIFICATION NO.

186 — BATCH NO.

**APPEARANCE:** Color, Aircraft Grey --smooth, homogeneous, dries to a dull finish.

**TOXICITY:** Nontoxic under normal conditions of usage.

**NON-VOLATILE:** Over 65% by weight.

**FLASH POINT:** Over 20°C. (86°F.)

**SKINNING:** Nonskinning.

**WORKING PROPERTIES:** Good leveling and covering properties.

**DRYING TIME:** To handle in less than 2 hours; to sand in less than 6 hours.

**SANDING PROPERTIES:** Excellent sanding properties after 6 hours using #280 sandpaper.

**LIFTING PROPERTIES:** Nonlifting at 4, 8, 24, 48, and 96 hours.

**FLEXIBILITY:** Withstands 180° bend around 1/8" rod after air-drying 24 hours and baking at 170°-185° F. for 24 hours.

**ADHESION:** Provides excellent wood anchorage for finishing coats of lacquer and enamel.

**REMARKS:** This surfacer is ideal for use on plywood aircraft as an aid in obtaining a smooth surface. It is manufactured from clear vehicle used in Testor's Sealer, Specification 14113. This combines the high water resistance and durability of the sealer with the ease of sanding obtained from the addition of pigments and inerts.

2 in a series of oratory Data ets on Specifi- ion Finishes. e and file these es... or send standard-size port forms nched to fit r binder.

• Write today for complete details on other Specification Finishes . . . and remember that our laboratory is at your service in the development of new and improved formulations to meet specific finishing problems. Send for folder describing our modern production facilities.

STOR CHEMICAL COMPANY, ROCKFORD, ILLINOIS, U.S.A.

knowing which fluid needle and fluid tip and air caps to use for the different types of finishing materials. Also, orange peel could be eliminated to a great extent, making for smoother finishes which require less rubbing for polished or dull-rubbed finishes.—F. HAGAN.

## How to Spray Paint Satisfactorily

We would appreciate being advised about the pressure you recommend for tank and gun when spraying varnish, per Government Specifications TTV-121A, and also the pressure recommended for lacquer enamel.—K. Mfg. Co.

I would like to answer these questions accurately and specifically but there are too many factors to be considered to give a complete and satisfactory reply. The factors that must be considered are:

1) Viscosity of TTV-121A after reduction, if any.
2) Type of spray gun being used.
3) Fluid tip size.
4) Air cap.
5) Length and size of fluid hose.
6) Object being coated.

From the above named points you can readily understand that each application is a separate problem. I suggest that you start from scratch, following these instructions:

Start with pressure tank filled with paint, using the size and length of hose at hand, and the spray gun for this job; also, using the cap and tip it is equipped with.

1) Set the transformer regulator (atomizing air) at a point between 40-lbs. and 50-lbs.

2) Set air gauge on pressure tank at zero.

3) The regular sprayman should have the article before him on the moving conveyor or in the booth in regular spraying position. The spray gun should be ready for spraying — with fluid adjustment full open.

4) The regulator on the pressure tank should be turned up until the sprayman announces that he has sufficient paint flow to coat the surface of what he is spraying.

5) Note the pressure gauge. (1-lb. to 50-lbs.).

6) Next return to the atomizing air regulator. As the spraying continues reduce the pressure until the sprayman is unable to control the paint on the surface.

7) Increase the atomizing pressure a little at a time until the article can be coated without runs (30-lbs. to 80-lbs.) The lowest atomizing pressure possible is advisable.

Follow the same procedure for your lacquer enamel or any other material to be applied with a spray gun. These instructions were printed in the 12-point program covered by center-spread advertisements in this magazine, starting with February 1942 issue. They cover all of the factors such as types of paint, viscosity, temperature, types of solvents, shape and size of articles to be painted, as well as the speed of the painting operation.

All of the adjusting and testing should be done as the sprayman works. He should have no knowledge of the pressures until after the tests are over. The reason for this is obvious. A spray painter gets into a rut and wants high pressures when low pressures will serve better.—E. C. FREDERICKS.

Education in the care and use of fire extinguishers during wartime conditions is very important.

## We Can Solve Your Wartime Finishing Problems!

NO matter where you are, we can give you overnight help in the solution of any finishing or painting problem you may encounter in today's emergency situation.

At each of these strategic points we have experienced technical men, ample research facilities, and complete manufacturing equipment and materials to meet the most unusual formulation requirement.

Let us help you get out the rush war jobs—help you lick the new and unexpected difficulties that so often strain production capacities to the breaking point.

Call or wire Glidden National Headquarters or your nearest Glidden plant, whenever you're up against a problem. We'll be Johnny-on-the-spot to help you.

**THE GLIDDEN COMPANY • National Headquarters, Cleveland, Ohio**
*Factories or Branches in Principal Cities*

**GLIDDEN**
*Everywhere on Everything*

TIME-TESTED
GLIDDEN PRODUCTS CARRY THIS FAMOUS MARK OF QUALITY

## What to Do With Cracks and Checks

We are asking you for a little information in regard to our problem. We are experiencing great difficulty with cracks and checks in our wood. We would like to know if there is anything we can spray on this wood that will take care of these checks to a certain extent, in the way of filling the cracks, for a transparent finish?

We have a considerable amount of wood that we must use and it is badly checked. We know of nothing else to do with it except to putty or cement it with stick shellac.—T. Mfg. Co.

---

We recommend that before any finishing operations begin (assuming that you have this wood in the white) you fill these checks carefully with a non-shring type of putty made especially for this purpose—one that is colored to match your wood in the white. You will need to use a putty that will not react unfavorably when finishing materials are applied. (In a letter we are giving you names and addresses of manufacturers of crack-filler putty.) Allow this putty to dry thoroughly and then proceed with your finishing operations.—ED.

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To combat a major cause of absenteeism in war industries, the National Safety Council launched the most ambitious campaign against off-the-job accidents in the history of the safety movement. It is a major part of the Council's expanded wartime program to reduce accidents that are hindering the war effort.

Off-the-job mishaps are as preventable as work accidents and their prevention is just as vital.

# Booklets Catalogs Circulars

### Washing-Drying Type of Conveyors

A variety of designs and sizes of "Metalwove Belts" for carrying light and medium size metal parts, horizontally or on an incline through washers, dryers and coolers, or to and from blast-cleaning equipment, are illustrated and described in a 4-page folder printed in black and green. Conveyor belts are shown with and without side retaining edges (side boards) and cross plates. For a copy of this "Bulletin A," write Audubon Wire Cloth Corp., Richmond St. and Castor Ave., Philadelphia, Penna.

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### Color Standards Folder

So many inquiries have been made on the subject of color standardization that General Printing Ink Corp., 100 Sixth Ave., New York, N. Y., has issued a folder entitled "Color Standards," which presents a convenient check-list of 34 color systems and color standards widely used in American industry and science.

The data contained in "Color Standards" is valuable as a permanent record and is helpful for reference purposes. A copy of this brochure is available upon written request to General Printing Ink Corp.

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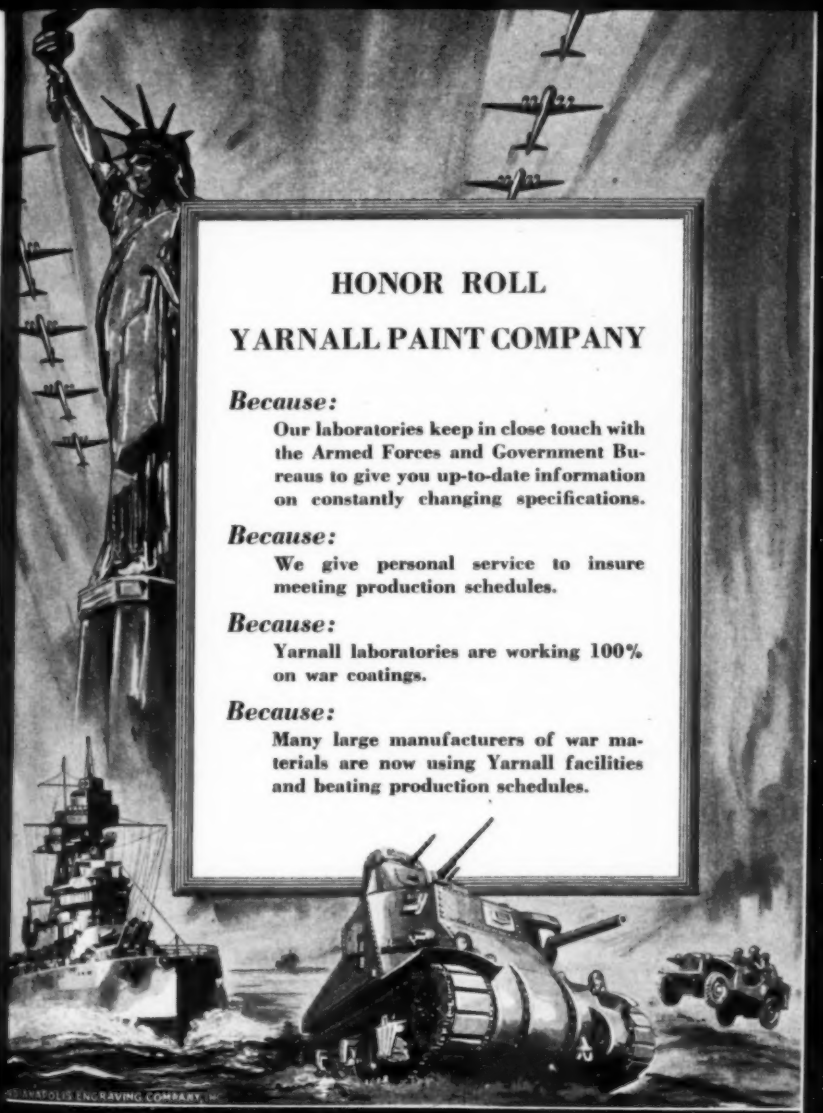
### Spray Painting Book

An interesting 32-page, 8½x11 booklet entitled "Eclipse Spray Equipment on the Job" has just been issued by the Eclipse Air Brush Co., Inc., 392 Park Ave., Newark, N. J. It is like taking a sightseeing trip without leaving your desk, to see how the other fellow handles his spray problems. The 8-in. pictures of actual spray operations in various industries such as



## HONOR ROLL

## YARNALL PAINT COMPANY

***Because:***

**Our laboratories keep in close touch with the Armed Forces and Government Bureaus to give you up-to-date information on constantly changing specifications.**

***Because:***

**We give personal service to insure meeting production schedules.**

***Because:***

**Yarnall laboratories are working 100% on war coatings.**

***Because:***

**Many large manufacturers of war materials are now using Yarnall facilities and beating production schedules.**

# YARNALL PAINT CO.

*Industrial Division*

PHILADELPHIA . . . . PENNSYLVANIA

shipbuilding, aircraft, baking (spraying grease on bread pans), machinery, leather, structural steel, munitions, will give the reader some idea of the scope of the equipment's application. Comments from several users reflect satisfaction with the result obtained. A copy of the booklet will be sent free to any one requesting it on company letterhead.

## Safety Catalog

A wide range of industrial safety equipment to provide protection for the head, eyes, nose, throat, lungs and other parts of the body, is described in the 25th edition of the Chicago Eye Shield Co. catalog.

Illustrations and descriptions include various types of protective lenses, goggles, welders' helmets and shields, respirators, masks, grinder guards and toe guards. Copies are available if requested on business letterhead by writing direct to manufacturer, Chicago Eye Shield Co., 2300-C Warren Blvd., Chicago, Ill.

## Tumbl-Spray Metal Washing

Complete information about the new American Tumbl-Spray metal-washing machine is now available in illustrated Circular No. 9 recently published by American Foundry Equipment Co., 555 S. Byrkit St., Mishawaka, Ind.

The new Tumbl-Spray machine is designed for removing chips, dirt, grease, and oil from machined parts, stampings, screw machine parts etc. By means of its special patented endless tumbling conveyor, the Tumbl-Spray achieves complete exposure of work to the cleaning action of the high pressure sprays.

## Use and Care of Fire Extinguishers

A new, educational booklet entitled "Maintenance of First Aid Fire-Fighting Equipment," has just been brought out by American-LaFrance-Foamite Corp., Elmira, N. Y.

The booklet is divided into six sections: 1) Vaporizing Liquid, 2) Soda Acid, 3) Foam, 4) Anti-Freeze, 5) Carbon-Dioxide Extinguishers, and 6) up-to-date charts giving complete data in condensed form as to extinguisher and engine characteristics, methods of operation, capacity, range of stream, etc.

Inspection, upkeep, charging, discharging, and recharging are all thoroughly discussed, with emphasis on the periodic practice-handling and discharge of the units under simulated fire conditions.

All fires are not alike—nor are all fire extinguishers. A knowledge of this fact is of more vital importance than ever today, with the ever-growing need for safeguarding our war factories from fire.

This timely and valuable booklet illustrates the various classes of fire, and types of extinguishers and wheeled engines. The booklet is free upon request.

## Metal Cleaner Bulletin

A 4-page bulletin describes and gives directions on how to use an alkali cleaner and de-oxidizer on the surfaces of aluminum, copper, nickel and galvanized metal. The material is called Nielco Lab. No. 1921. It is a free-flowing powder, readily soluble in warm water, requiring no special type of containers for shipping, and is produced to meet a specific demand for a combination cleaner and de-oxidizer to use on aluminum, and which does not tarnish copper.

Send for a copy of this bulletin to Nielco Laboratories, 19720 Florence Rd., Detroit, Mich.

## Industrial Fire Brigades Training Manual

This 184-page volume, recently published by the National Fire Protection Association, is designed to meet three widespread demands: First, as a training manual for employes assigned to carry out fire fighting duties under direction of the chief of the private brigade; second, as a reference book in those plants where a fire brigade is already organized, but where the experience of a large group of experts can be profitably utilized; and third, in those plants which need the essentials but not the details of large plant fire protection organization.

The text was prepared by the N. F. P. A. Committee on Firemen's Training, a group of leading fire chiefs and fire protection experts. The book is divided into 16 chapters. It is profusely illustrated with drawings and photographs. Page size is 8¼x11-in. Single copies $1.50 postpaid from the National Fire Protection Association, 60 Batterymarch St., Boston, Mass.

## Dolan Company Completes New Addition to Plant

V. J. Dolan & Company, Inc., Chicago, Ill., announces that it has just completed a small addition to its plant. The new space will be used as a grinding room in which roller and buhr stone mills will be operated. This is one more step in a program of expansion which the Dolan Company inaugurated some time ago.

# FOR SALE

**This is our peace-time stock of various baking enamels and assorted paint materials. We want to sell at once—at our actual cost—*no priorities needed!* Take all or any part. All this material in excellent condition. Wire or write us!**

| Quantity | Description | Manufacturer |
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| 286 " | Ivory Polymix No. 2071, Baking Enamel | Ault & Wiborg |
| 161 " | Black Polymix, Baking Enamel | Ault & Wiborg |
| 275 " | VX White Enamel, Baking Enamel | Pratt & Lambert |
| 164 " | White Snydur Enamel, Baking Enamel | Kay & Ess, Dayton |
| 55 " | Ivory Snydur Enamel, Baking Enamel | Amsco Products |
| 61 " | Ivory Morocco No. 9712, Baking Enamel | Kay & Ess, Dayton |
| 10 " | Clear Morocco No. 9734, Baking Enamel | Kay & Ess, Dayton |
| 25 " | VX-147 Red Enamel, Baking Enamel | Pratt & Lambert |
| 10 " | VX White Enamel, Baking Enamel | Pratt & Lambert |
| 95 " | Pink Topcoat, Synthetic Air Dry | Zapon Company |
| 92 " | Blue Topcoat, Synthetic Air Dry | Zapon Company |
| 110 " | Snydur Reducer | Kay & Ess, Dayton |
| 55 " | Amsco Thinner | Amsco Products |
| 108½ " | 144 VX Reducer | Pratt & Lambert |
| 55 " | L-362 Bronzing Liquid | Cincinnati Varnish Co. |
| 54 " | C-4000 Clear Platers' Lacquer | Ault & Wiborg |
| 275 " | L-3721 Clear Platers' Lacquer | Cincinnati Varnish Co. |
| 25 " | Aluminum Lacquer | Pratt & Lambert |
| 55 " | 2280 Clear Platers' Lacquer | Pratt & Lambert |
| 54 " | Paraffin Oil | Cincinnati Oil |
| 106½ " | Methyle Chloride | R & R |
| 108 " | Paco Solvent | |
| 40 " | Regular Thinner | Ault & Wiborg |
| 35 " | White Silk Screen Paint | Sherwin-Williams |
| 1 " | Transparent Base Silk Screen Paint | Sherwin-Williams |
| 2 " | Purple Silk Screen Paint | Sherwin-Williams |
| 10½ " | Fire Red Silk Screen Paint | Sherwin-Williams |
| 2½ " | Ultramarine Blue Silk Screen Paint | Sherwin-Williams |
| 3 " | Mahogany Stain | |
| 75 " | Brown Woodyouth | |
| 30 " | Solvent to be used with Woodyouth | |

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Industrial FINISHING

Distributed monthly to finishing room and paint shop foremen, production superintendents and company officials of metal-working, woodworking and miscellaneous industrial plants where production finishing is a major operation in parts and products manufacture.

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# Editorial

## Wartime Foreman Starts New Workers Correctly

★ In view of the fact that our present war involves so much "speed up," as compared to the one 25 years ago, it is becoming more apparent every day that our Wartime Foremen are becoming more and more the key men in industry. However, at our present rate of high production and our ever-present need of speed and high quality, the old-fashioned "hard-boiled" foreman is no longer necessary.

Our old "Simon Legree" of yesterday would feel very much out of place if he were to step into one of our many high-production war plants of today. He would find not only an intelligent neat-appearing group of men and women, but a group of highly trained skilled workers, each one especially trained to his or her job. He would also learn to envy the smart well-trained modern Wartime Foreman.

Among other things, he would be impressed with the difference between starting an employe the old way and the new way. Our modern foreman first meets his new worker and, through conversation with him, places himself on the same level as the employe, to gain his confidence. Then he takes the new employe to the place where he is to work. After carefully telling and showing his new worker, in the easiest and simplest way, the complete operations he is supposed to perform, the foreman then asks the employe to tell and show him how to do these same operations, just as though the foreman were the worker and the employe was the foreman.

This way there can be no misunderstanding. The foreman encourages the employe to ask questions, and he explains all details fully and patiently. He soon puts

★ Guest Editorial . . . Many readers can write an excellent editorial — two or three paragraphs that present a timely suggestion or valuable idea which will stimulate real thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.

WITH MANY MATERIALS

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the new worker "on his own" but keeps in close contact with him, or designates another workman to whom the learner can go for instruction in case the foreman is absent from his department.

In a very short time the new man has picked up the information and required speed that is necessary on his job. In this way of training employes, our modern Wartime Foreman can find time to arrange for his necessary production schedules and operate his department smoothly and efficiently, and still know that he has a well-trained group of operators behind him. These workers consider their foreman on their own level, and not as one to look up to. They are not afraid of being "bawled out."

After seeing these things carefully carried out and followed up, I am sure that our one-time "hard-boiled" foreman would be changing his way and ideas. And as for our modern foremen, they should adopt a slogan that I have adopted from my former foreman, as I find out that it makes things a whole lot better. That is, "Start right, and the rest is easy."—GERALD MANCHESTER.

## *"We Dood It" in Aircraft Production*

★ A row of gaunt ugly fuselages was lined up in primary assembly at our plant early this year. They were rough tubular structures, a mass of welded tubes and cross members, that somehow reminded you of skeletons. In fact, that is what they were—skeleton structures waiting to go through that

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Established 1917

magical process of transformation that makes them into sleek beautiful airplanes.

Then one morning there appeared a sign on one of the naked frames at the far end of the line. "*This ship must be ready to fly by January 31.*" Those words were not an order. They were a simple statement of fact, expressing the faith of the management in the ability of every one of our workmen. Throughout the breadth of this great country, other employes were asked to attain goals that, but a few short months ago, seemed impossible.

January 29th rolled around. At 3:25 p.m. a final assembly inspector answered that challenge and expression of faith. In three simple words, he wrote the fate of Hitler with a few strokes of an old paint brush. Leaping onto the center section of a proud, gleaming plane rolling through the final assembly doors he placed a sign against the turnover post. Written in flaming letters, on the back of the sign, expressing our country's faith in us, were these undying words, "*We dood it.*" That was the ship which, only a few short days before, was a gaunt ugly skeleton at the far end of the line.

Yes, folks, we did it. Not without sweat and worry and work. Not without loss of sleep, and sometimes without eating for long hours at a time. But, "We dood it." That is the all-important thing. To no individual or department can any single honor be given. All contributed their time, labor and enthusiasm equally. And all felt repaid, too, when that certain ship rolled through the doors and we heard and felt the full-throated

cheer of a united and free men ring through the plant. That sign was a solemn pledge from those same folks of more that is to come.

Yes, in our small way, "We dood it." At other plants like ours, other folks are doing it too. Throughout this land the collective efforts of a united people are rolling such a fleet of ships through the factory doors that a year ago seemed impossible. The cheers of those folks as they roll the ships through the doors are even now reverberating against the Rock of Gibraltar and down through the mountain gorges of the Burma Road.

With a like gesture of reckless courage, with a greater sacrifice than we will ever know, our boys in the armed forces all around the world are advancing ever onward, toward the citadel of enemy resistance, under that same banner, "We dood it."

Once the Axis proudly boasted we could never match their production schedule. We were to be destroyed first. Today, American production equals the rest of the world. Hitler once proclaimed to his people that Berlin would never be bombed. But it has been bombed, and bombed heavily too. Today, The Star-Spangled Banner waves gallantly over sections of the world that a year ago were in possession of the enemy, placed there by an army of fearless men, "Who dood it."—H. J. ETHERIDGE.

## To Conserve Materials, Get Intelligent Inspectors

★ The importance of conservation of materials and labor is self evident. How this can be best accomplished is the question. I suggest a more rigid regulation in the selec-

★ ★ ★ ★
Specifications +
PLUS!

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Within specification limits there are many possibilities of improvement in speed, workability, and freedom from rejects.

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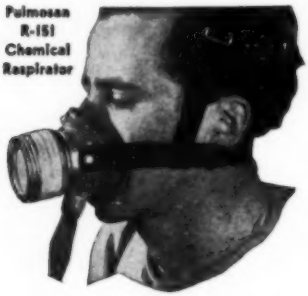

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The R-151 Respirator has an outer dust filter which protects chemical cartridge against clogging. Simply replace inexpensive dust filter — get longer service from cartridges, keep down breathing resistance. Write for details and prices.

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tion of inspectors of war supplies. An intelligent inspector, immune from personal prejudice, is the best insurance we can procure for our Government and for ourselves.

Here is a case in point: A mediocre manufacturer of peace-time paper luxury products is awarded a large contract for wartime plywood cabinets. These cabinets are processed in panels, passed through a self-improvised coating machine, which not only fails to properly coat the upper surface, but neglects entirely to coat the important edges of the panels.

It is evident, from the practical standpoint of efficiency and effectiveness, that these panels should be completely coated, even if they have to be dipped and squeegeed. But the unsatisfactory coating machine schedule is continued, for the bull-head reason that too much money has been spent in building the embryo machine to warrant scrapping it.

An intelligent inspector would immediately recognize this inadequate protection and reject it; but because of ignorance or influence the inferior product is permitted to pass.

To rapidly accomplish the conservation of natural resources, I repeat that I think I know one way to secure this desired end, and that is by appointing intelligent and conscientious inspectors of war materials.—A. J. BEECHER.

## *Paint Shop Foremen Are Heroes of Production*

★ As the public and government officials stand by and praise our great bombers, PT boats, long-range guns and jeep cars, few if any of them ever think of the workmen, materials, supplies and

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equipment that are employed to protect the surfaces of our guns and other war equipment. Our factory finishers and painters are the men on whose shoulders rests the job of putting on suitable coatings of paint to protect these valuable pieces of war equipment. It is their job to see that the surfaces are clean and that the proper primer and the exact film thickness of paint are applied to each piece of steel or aluminum that leaves our shores.

This protective coating must be tough and durable. It must protect our war equipment wherever it goes, whether to Africa where there is intense heat, or to Iceland where there is severe cold. And it must be protected while it is en route over the ocean, where the salt sea air will eat into or cut almost any type of paint.

The foreman of the finishing or painting department must be sure that every finished article is coated according to government specifications; and regardless of what the allocations may be, he must still get all of the specified materials to meet his production requirements and to keep things rolling to our boys at the battle fronts, so they will be the best equipped soldiers in the world. After all, this is a war of production and the intelligent use of precision mechanical equipment.

And, in addition to all of the responsibilities just outlined, the paint department foreman must continue training new help. This is really a big job. His experienced well-trained men — the mainstays upon whom he depends for his department's results—may leave or become incapacitated any time, but

*Speeds production for coating* **WAR PRODUCTS**

**500 Large Cartridge Clips Coated Per Minute 1000 1" Buckles Coated Per Minute with R-200**

**"SPEEDIP" Whirl Enameler and Coating Machine**

A combination dipping-whirling machine for completely coating large quantities of small parts with lacquer, enamel, paint, oil, wax, etc. • All operations are within the machine. Parts are dipped into coating material, raised and whirled. Time—as little as 30 seconds. Speeds up production—cuts finishing costs—saves up to 90% of coating materials.

WRITE FOR FURTHER DETAILS OR SEND SAMPLES TO BE COATED.

**RONCI MACHINE CO.**

**45 River Ave., Providence, R. I.**

production must go on. Newly trained help must be utilized to replace them. There is no reservoir of trained men from which to draw replacements.

His next step is to keep up the morale of his workers—both men and women now—by doing some smooth talking to impress upon their minds the important part they are playing in this great global war. Still, when he is out among the rest of the craftsmen, he is considered to be only a paint man—a man in one of the dirtiest lines of work in the plant—because he is always handling paint of one type or another.

Really, the paint department's production, which usually is the last step in the line, is one of the most important jobs. Regardless of how good the item may be, it is protective coating that preserves it and keeps it serviceable. It is also the responsibility of the paint department to test and try out many new types of paint, supplies and equipment before these are given places of responsibility in our war plants. Let's give our paint department foremen some sort of recognition for their distinguished service.—HOWARD FORD.

### *Salvage All of Your Scrap*

To move every pound of critically needed waste materials into the flow for the manufacture of implements of war, is the over-all objective of the Salvage Branch of the Conservation Division, WPB. To make every man, woman and child in America conscious of this need, and to secure the active co-operation of every American to "get in all the scrap—now," is equally important.

## Substitute Materials For Civilian Goods

WHILE MANY furniture factories are now engaged in the production of war goods, there are other furniture manufacturers still making civilian goods for use on the home front. Of course, these civilian goods must be finished. While finishing materials can be obtained for war goods, which must come first, it is becoming more difficult to obtain certain finishes for civilian goods. This is due to the scarcity of critical raw materials from which were manufactured the type of finishes that we used in peace time.

Manufacturers of finishing materials have put on the market a number of substitutes for our regular finishing materials. These new civilian finishes are formulated without any of the critical raw materials necessary for war production. While these substitutes are not as desirable, in some cases, as the goods they are replacing, they are proving satisfactory in most instances and they are being widely used on large quantities of civilian products. These "Victory Finishing Materials" (I think they should be called that) can be obtained from several finishing material houses in quantities to cover most of our needs.

One of these substitutes is made to replace white shellac, which is no longer available except in a few cases, and then only in limited quantities. This material is as white as shellac. It reduces with alcohol in the same proportion as white shellac, and the film dries and sands as good as shellac. Due to its solubility in alcohol it works quite well for making shellac toners and wash coats. While I have used only one brand of this material, I understand


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**Apply Wyandotte Spray Booth Coating *first* for quicker removal later of layers of inflammable paint. It takes only a thin coating to make cleaning easier, speedier, more economical. Write Wyandotte Chemicals Corporation, J. B. Ford Division, Wyandotte, Michigan, for full details!**

**Wyandotte F-100 will help cut your floor-cleaning costs. Even heavy soil disappears when this remarkable compound gets to work!**

CROWN

"25"

This NEW Crown gun gives high efficiency and speed in production work and maintenance and other painting and finishing jobs . . Uses time-tested Crown "20" Spray Head assemblies . . Full Spray Width, Material Adjustment . . Write for literature and prices.

*Built to Stand the Gaff*

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**SPEED UP WARTIME Production!**
WITH THIS NEW

**Cesco No. 94 RESPIRATOR**

★ Full U. S. Bureau of Mines Approved (No. BM-2142) against Type A (Silica), Lead and Nuisance Dusts. Equip your workers with this new COMFORTABLE and SAFE Respirator for FASTER DEFENSE PRODUCTION. It's the "Cesco No. 94." Write.

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**OUR MEN NEED**
**★ BOOKS ★**

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**ALL YOU CAN SPARE**

Help a man in uniform enjoy his leisure hours. Give your good books to the 1943 VICTORY BOOK CAMPAIGN. Leave them at nearest collection center or public library.

there are several concerns that manufacture and sell it.

For some time now there has been a substitute for lacquer sealer. This sealer has more build than most lacquer sealers and, while it does not dry as fast as lacquer sealer, some types of it will dry ready for sanding in one hour, while other types of this sealer require an overnight drying. Most types of this sealer will work under varnish only.

Then there is now available a high-grade water-resistant, alcohol-resistant flat varnish which is being widely used instead of flat lacquer (which is difficult to obtain now). This varnish will dry dust-free in one hour at 90° to 100° F. It can be rubbed, waxed or polished after an overnight drying, if desired.

There are other substitute finishing materials, many of which have been reformulated to avoid the use of restricted raw materials. While some of these materials will not produce finishes as good as we are accustomed to putting on civilian goods in normal peace times, it is necessary that we use them in order to release the critical raw materials for use on war goods. After all, our big job is to "Finish the Axis."—H. W. CHESTER.

## Directing Your Workmen for Best Results

ASK ANY alert and successful foreman finisher what he attributes his success to. If he isn't too modest he will tell you that, aside from his knowledge of finishing materials and how to use them to produce the desired colors, finishes, etc., the art of handling the men under his supervision is one of the great fundamentals of modern production. How he directs,

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SKIS

SERGEANT ALBERT E. SCHMID, U. S. MARINE CORPS, became Philadelpha's number one hero after the battle of the Tenaru on Guadalcanal. Sgt. Schmid killed 200 Japs who tried to knock out his machine gun post and break through the lines. He said his gun became red hot but never jammed. Al is now on sick leave and is helping Uncle Sam sell War Bonds.

It required skill and good workmanship by the men who made Sgt. Al. Schmid's gun which didn't jam during the critical period. More power to the Marines and to the men who produce their guns and equipment.

*Phone, wire or write and let one of our finishing experts help you "keep production rolling."*

**THERE'S NO TIME TO LOSE—THERE'S JUST TIME TO WIN!**

THE LAWRENCE-McFADDEN CO.
Headquarters for Fine Finishes Since 1875
7430 STATE ROAD PHILADELPHIA, PA.


trains and handles these men determines the quality and quantity of production, and hence the labor costs per unit, in his department.

Go into any furniture finishing room you wish and you will probably find several men who know just as much as their foreman about how to apply the right materials to produce a good finish. But few of these men, if given the opportunity, could successfully handle the men.

Every foreman must use psychology to successfully handle men, for in any group of workers in any department and occupation, you will find individuals of different temperaments, intelligence and ability. The foreman must use different methods in handling different men. In order to do this it is necessary to consider each man, as far as possible, as to his ability, temperament, intelligence, etc.

In any finishing room some of the most talented workmen are very temperamental. If these men are handled in the right way they can be trained to do the best work because their temperament can be turned into an ambition to excell.

Many times a foreman can take a man of limited ability and train and handle him in such a way as to get good work and production from him. A tactful foreman finisher may sometimes take a man who has failed at another job of the same kind and, by instructing and directing him in the proper manner, get good workmanship and production from him.

Of course, I realize that the average foreman finisher cannot spend all of his time training and instructing men; neither can he be continually training men all over his department, as this is very expensive. Naturally, an inexperi-

enced man cannot turn out very much work until he is trained.

In some finishing rooms there are many experienced and capable men who are not turning out the amount and quality of work that they are capable of doing, simply because they are not handled and directed in the right manner. By this I do not mean that the foreman must not be a man with plenty of "backbone," for I realize that a foreman must be a man of strong convictions, once he knows he is right, and he must have the respect of all men under him. He must make them understand that he is their boss.

The overbearing, bully type of foremen are fast fading out of the picture. Any laborer of average intelligence resents this type of foreman and many times he certainly will not produce his best work when he feels this way about his foreman.

I think every foreman finisher should direct, handle and train his men in such a manner as to command their respect and good will. At the same time, I am sure he can demand and get the best from them in quality of workmanship and production.—H. W. CHESTER.

## Letters from I. F. Readers

*(Continued from page 8)*

make an intelligent allocation of raw materials of this type, they must know in advance the probable requirements of the industry and establish the list of end-uses for which the supply of material will be available.

This procedure requires a great deal of time and at present all requests for allocated materials must be entered with the WPB on a specific date of the month preceding the delivery month.

We realize that a manufacturer in preparing his request for an allocation is required to accumulate a consider-


## WAS YOUR FINISHER DRAFTED?

Repairs to radios and furniture easily made in about 10 minutes by the Nationally Famous Lubrisol Pad-O-Paque Process the greatest discovery of the age—anyone can do it, you need not be an expert nor have any special talent. Also included in this kit is our N2 Electro Knife for Burning-In our universally accepted and nationally advertised Lacstix. The regular sale price of this knife is $7.75. There are over 52 items for all types of repair in this kit attractively arranged in a new type steel, cantilever constructed chest with leather handle.

For repairing porcelain or refrigerators order the Porcelkit shown at left of metal chest which contains 21 items including our nationally famous Porcelstix and other articles enabling you to make repairs to any type of porcelain or refrigerators in three to five minutes. Price complete packed in attractive slide top wood box only $12.50. If ordered with the Master Finisher's Supreme Service Repair Kit the two together may be had for only $44.00.

**Stop Worrying—Get a Master Finisher's Supreme Service Repair Kit—Only $34.50—Supply Limited —Order Now.**

**FINISHINE LABORATORIES, INC., SYRACUSE, N. Y.**

able amount of data which involves still further loss of time. After an allocation is made the time elapsed in shipping the material and manufacturing the paint must also be considered.

In view of this situation, it is highly desirable, and in fact almost necessary, that any order for industrial or technical coatings should be placed with you at least two months prior to the date when the material must be delivered. If the user of protective coatings will bear this in mind and schedule all requirements with a view to placing orders in advance, the allocation of critical materials and the production of paint products will be materially aided, resulting in much better and more consistent service.

Your co-operation in this regard will be greatly appreciated.—T. H. Bucy, Chief Protective Coatings and Materials Section, WPB.

## Colored Wax Finishes

On pages 103 and 104 of the Feb. issue of INDUSTRIAL FINISHING, we note a reference to colored wax finishes. May we also have information as to the manufacturers of colored wax finishes?—R. Paint & Equipment Co.

Information supplied.—ED.

## Moisture in Wood

We are interested in obtaining tear sheets of the article, "Moisture in Wood and Its Effect on Finishing," by W. Seeman in June 1941 issue of your publication. We will appreciate it if you will send us this material. . . .—THE ARCHITECTURAL FORUM.

Request granted.—ED.


## Classified Advertising

**Rate: 45 cents per line per insertion — minimum $1.35**

### POSITION WANTED

As Director of Aircraft Sales with large reliable manufacturer of paints who wants the services of man with eight years' experience in the Aircraft Industry. Interested only in a permanent connection. Address IF-920, care Industrial Finishing.

### PLANT WANTED.

Will invest in, or buy outright, lacquer and material finishing plant. Address IF-919, care Industrial Finishing.

### TECHNICIAN WANTED.

A paint, varnish and lacquer technician needed by an old established, mid-western manufacturer. Interested parties are required to state in their first letter their position in the draft, and give comprehensive description of experience background. Address IF-918, care Industrial Finishing.

### HELP WANTED—SALESMEN.

Sales Engineer by old established manufacturer of complete lines industrial synthetic enamels, lacquers, etc. Territory midwest section. Salary and bonus. Write, stating qualifications, age, etc. Our men know of this ad. Address IF-921, care Industrial Finishing.

### LACQUERS—PRIMERS—SYNTHETICS

Nationally-known manufacturer will sell overstock of high-grade Lacquers, Primers and Synthetics. All types and colors at greatly reduced prices. Write, giving us your detailed requirements and colors. STEELCOTE MANUFACTURING CO., 3418 Gratiot St., St. Louis, Mo.

## —WANTED—

**Industrial and Production Finish Paint Salesman or Technician . .**

By nationally-known Paint Manufacturer for a sales and contact job in New Jersey and New England States. The man we want has a sound knowledge of and experience in the field of Special Finishes, Paint Coatings, Industrial and Maintenance Paints in general. He probably lives in New York, New Jersey, or New England; has following or entree to territory's largest plants, etc., who buy and use paints for Industrial Finishing. This man is used to earning from $5,000 to $7,500 annually, and would welcome new connection with leading manufacturer where he will have unlimited opportunities for greater earnings, assured protected territory and a secure post-war position. Our plant can make overnight shipments throughout the territory, and we have a staff of young and skilled Laboratory experts ready to assist on any problem. To the right man goes the top-salary, expenses and commissions. Write all details in first letter so personal interview can be arranged promptly.

Address IF-916, Care
Industrial Finishing, Indianapolis, Ind.

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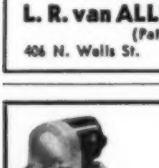

**STANDARD D-4 Abrasive Band Grinder**

*This new bench type grinder assures fast, quality finishing on metals, plastics, wood, fibre . . at low cost. Equipped with improved band tension control and specially designed, protective motor hood. 4x36¼" band. Ideal portable unit.*

Other styles and sizes in New Booklet on Finishing—Write Today

**WALLS SALES CORP.**
95 WARREN STREET NEW YORK, N. Y.

# Give the lads a lift.....

★ The very best people—those in the uniforms of our Army and Navy—are riding with strangers these days. When you are lucky enough to be rolling along in your car on treasured rubber and precious gasoline, don't stand on ceremony—stop and pick the boys up.

Camps are sometimes pretty far from towns. Highways are likely to be lonely ways when you are making a solo hike. A missed bus might bring a penalty in future liberty that you could prevent.

There's something in it for you, too. These lads will chat about things that will make you even prouder of the men who pack our guns. Don't ask them about guns, or troop movements, or their outfits, or anything of military importance. They'll freeze up if you do. But they'll generally be more than pleased to tell you about their home towns, their girls and their families.

From your conversations you'll come to recognize again those qualities that make a man an American, whether he's a "Dutchman" from Eastern Pennsylvania or a "Swede" from Seattle. That's one of the things that Hitler just can't understand.

★

THE ADVANCE Paint organization has gone "all out" in backing up our boys on both the home front and the battle front .... and we're also backing them up with proper coatings for their implements of war.

★

ADVANCE PAINT COMPANY

*Manufacturers of Wood & Metal Finishing Materials*

INDIANAPOLIS, INDIANA

# SEND YOUR FINISHING PROBLEMS TO RELIANCE

Pre-war standards are no measure of today's finish requirements. Substitute materials have had to be found in many cases and manufacturers have been forced to adjust their operations to the ever-changing pattern of war requirements. Thru it all—Reliance has been able to give its clients answers to their finishing problems. Our experienced laboratory men have combined their skill with practical shop experience to meet every challenge. No problem is too tough for us to tackle. May we help you too? There's no obligation.

**Reliance Varnish Company, Inc.**

**Louisville** **Kentucky**

*Tuf-Tex is a typical Reliance Varnish development—designed to speed up production—save money over lacquer and still maintain quality. Free sample on*

*Sateen* **TUF-TEX** *the Lifetime finish*